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*Iowa State University*

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**Status of veterinary care for organic livestock producers in Iowa and suggestions for  
improvement**

by

**Jennifer Anne O'Neill**

A thesis submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
**MASTER OF SCIENCE**

Major: Sustainable Agriculture

Program of Study Committee:  
Betty Wells, Major Professor  
James K. West  
Kathleen Delate  
Mary Wiedenhoeft

Iowa State University

Ames, Iowa

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## **ABSTRACT**

From 1997 to 2008, organic food sales in the United States have seen average yearly increases of over 18%. Producers are responding to this consumer demand, but one challenge is the need for alternative veterinary care options for livestock production, as antibiotics and a variety of other conventional treatments are excluded by National Organic Program (NOP) standards. This study assessed access to and education about veterinary care for organic livestock systems, with the goal of identifying areas for potential improvements. Two surveys were conducted to address the issue. The first was mailed to all USDA certified organic livestock producers in Iowa, and the second was mailed to all production animal veterinarians in the Iowa Veterinary Medical Association (IVMA). The producers surveyed handled most routine herd health needs without veterinary consultation and indicated that herd health was not a significant challenge. The biggest reason producers cited for their self-reliance was lack of herd health problems. However, the veterinarians surveyed indicated widespread health challenges within organic systems, and stressed the importance of veterinary involvement. While most veterinarians expressed some reservations about organic production, the majority indicated interest in it and recognized consumer demand for organic products. Most believed information related to organic systems is difficult to access and favored increased educational options, such as continuing education credits and/or increased information within veterinary medicine programs. The veterinarian survey showed a high degree of misunderstanding regarding the definition and rules of organic production, existence of national organic standards, and where to access authoritative information. This

indicates that available information regarding organic standards does not always make its way into the hands of veterinary professionals.



## **CHAPTER 1. Introduction**

In recent years demand for organic products has been outpacing supply. By responding to this demand, farmers have the potential to earn competitive profits at a scale that is more manageable than conventional agriculture now demands, within a system whose expressed goal is to “foster cycling of resources, promote ecological balance, and conserve biodiversity” (USDA Agricultural Marketing Service, 2010). However, significant infrastructural challenges exist with regard to organic production, one of which pertains to livestock health and welfare. Therefore, it is important to consider the opinions, understanding, and experiences of both organic livestock farmers and the veterinarians who work in their communities and to understand the history of organic agriculture as well as current educational frameworks for those providing veterinary care in organic livestock systems.

### **1.1 History of Organic Agriculture**

Up until World War II, all U.S. agriculture was organic agriculture. During the war, however, technologies were developed that, when modified for agricultural use, resulted in heightened productivity. Nerve gas weapons, for example, were adapted for use as pesticides, and ammonium nitrate used for munitions became the first ammonium nitrate fertilizer. While these technological innovations resulted in economic benefits, they also brought with them environmental and social costs. As a result, some farmers, while continuing to embrace many new technologies, opted to eschew the use of chemical inputs they viewed as potentially dangerous to the environment, opting instead for biological, physical, and cultural methods of improving yields, managing pests, and maintaining soil health (Delate, 2009).

During the 1960s and 1970s, the public began to differentiate between organic and non-organic food products after Rachel Carson's *Silent Spring* heightened awareness of problems associated with the use of agricultural chemicals, especially insecticides (Baker, 2005). Carson, a biologist, insisted the use of pesticides, especially DDT, had detrimental environmental effects, especially on birds, and suggested that the chemical industry had not been forthcoming regarding potential health effects of their products (Carson, 1962). Water pollution and energy concerns during this time provided further motivation to explore the organic option. Demand for organic food products grew, resulting in the establishment of Rodale Press's voluntary certification program in 1972, along with several state laws governing organic production during that same decade (Baker, 2005). At that time, Robert Rodale defined organically grown food as:

Food grown without pesticides; grown without artificial fertilizers; grown in soil whose humus content is increased by the additions of organic matter, grown in soil whose mineral content is increased by the application of natural mineral fertilizer; has not been treated with preservatives, hormones, antibiotics, etc. (quoted. in Jukes, 1974).

During the Farm Crisis of the 1980s, the ecological, social, and economic consequences of modern farming further heightened consumer demand for organic products, but inadequate regulation of organic standards threatened to undermine the legitimacy of the organic label. Responding to concerns voiced by organic farming, consumer, animal welfare, and environmental organizations, Congress passed the Organic Food Production Act (OFPA) as a part of the 1990 Farm Bill. The National Organic Standards Board was appointed by the USDA in 1992, which led to the establishment of the National Organic Program (NOP). After numerous attempts to agree upon a uniform set of organic standards, the first proposed NOP Rule was published by the USDA in 1997. A final version was published in 2000, and

in October of 2002 the OFPA was implemented (Baker, 2005). Currently, the USDA describes organic agriculture as follows:

Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony. (USDA National Agricultural Library, 2009)

Specific requirements for production are maintained and amended by the NOP, which also accredits and oversees organizations that inspect farms for organic certification. At the same time, the NOP regulates labeling of organic consumer goods to ensure the integrity of organic production (USDA National Organic Program, 2009).

While this study focuses primarily on organic agriculture in the United States and more specifically in Iowa, it is important to note that organic standards have arisen across the globe based on similar concerns. The General Council of the European Union (2007) defines organic agriculture as:

. . . an overall system of farm management and food production that combines best environmental practices, a high level of biodiversity, the preservation of natural resources, the application of high animal welfare standards and a production method in line with the preference of certain consumers for products produced using natural substances and processes.

Although U.S. farmers and consumers share many of the motivations for organic agriculture with people from other countries, production standards vary considerably, especially with regard to animal care. In the United States, disease prevention is essential, and synthetic chemicals and antibiotics are generally disallowed as treatment options. However, treatment cannot be withheld from a sick animal in order to maintain its organic status. If it becomes necessary to treat an animal with a prohibited substance, products from that animal cannot be represented as organic (Code of Federal Regulations §205.238, 2010). In Europe, prevention

is also critical, but if an animal requires treatment that is not approved by organic standards, that animal can still retain its organic status; even if the animal is treated several times it can still eventually transition back into organic production (General Council, 2007).

## 1.2 Increased Demand as a Result of Environmental, Economic and Health

### Concerns

According to the Organic Trade Association (2009), organic food accounted for 3.5% of food products sold in the U.S. in 2008. From 1997 to 2008, the average increase in organic food sales in the United States was 18% (Table 1).

Table 1. Organic food sales, total U.S. food sales, and percent of total food sales that is organic

Year	Organic food sales (\$ Million)	Change from prior year (%)	Total food sales (\$ Million)	Organic food sales as a percent of total U.S. food sales
1997	3,594	N/A	443,790	0.81%
1998	4,286	19.2%	545,140	0.94%
1999	5,039	17.6%	474,790	1.06%
2000	6,100	21.0%	498,380	1.22%
2001	7,360	20.7%	521,830	1.41%
2002	8,635	17.3%	530,612	1.63%
2003	10,381	20.2%	353,406	1.94%
2004	11,902	14.6%	544,141	2.19%
2005	13,831	16.2%	566,971	2.48%
2006	16,718	20.9%	198,136	2.80%
2007	19,807	18.5%	628,219	3.15%
2008	22,929	15.8%	659,012	3.47%

\* Source: Organic Trade Association's Manufacturer/Organic Industry Surveys, 2006-2009

Although the table does not show data for 2009 and 2010, a recent talk given by a director of the board of the OTA indicated that growth in organic food product sales had been down as low as 6% during the economic downturn of 2009, but is again up over 10% and climbing

during 2010 (Clarkson, 2010). Growth in sales for organic non-food products has been climbing at an even more rapid pace in the past few years, as indicated in Table 2.

Table 2. Organic non-food sales and growth in U.S. since 2005

Year	Sales of organic non-food (\$ Million)	Growth rate as a percent increase from prior year
2005	744	32.5%
2006	938	26.1%
2007	1,182	26.0
2008	1,648	39.4

\* Source: Organic Trade Association's Manufacturer/Organic Industry Surveys, 2006-2009

Recognizing the growing importance of organic agriculture, the USDA National Agricultural Statistical Service (NASS) Census of Agriculture conducted the first ever Organic Production Survey in 2008 and found that more than 78% of organic producers planned to maintain or increase organic production in the next five years (USDA NASS, 2010). All 50 states contained organic farms or ranches, which comprised 4.1 million acres of land nationwide (USDA-NASS, 2010). The state of Iowa ranked in the top ten U.S. states for number of farms producing USDA certified organic or "exempt" dairy cows, beef cows, all other cattle and calves, hogs and pigs, goats and kids, layer chickens, and broiler chickens. By law, producers who make less than \$5,000 per year from organic product sales on their farms can qualify for "exempt" organic status, which means they are still allowed to represent their products as organic without going through the certification process. However, these farms are still required to follow USDA requirements for organic production and can be subject to inspection if deemed necessary. In contrast with census data, this study reports only on producers currently certified as organic by the USDA.

The significance of organic agriculture is not unique to the United States, as it is increasing worldwide, where organic agriculture is seen as offering hope for food security in developing nations. Badgley et al. (2007) evaluated a dataset consisting of 293 examples comparing crop yields across the globe. Their research suggested that in the developed world, conventional agriculture typically outperformed organic methods, while in the developing world, the opposite was true. Their models predict that organic management could produce enough food to meet global population needs and possibly more without putting more land into agricultural production. The Badgley study has been criticized for several reasons, one of which pertains to its inappropriate use of the word “organic” in some cases (Avery, 2007). However, John Reganold (2009) of Washington State University states that in general, developed countries see yield drops of 20-30% for grain crops and 10-20% drops for other organic crops in organic systems, but developing countries commonly experience increased yields, especially due to increased water holding capacity in dry periods. Long-term side-by-side research at Iowa State University from 1998 – 2009 showed corn yields that were higher in organic systems or equal with conventional except in 1999. Soybean yields associated with the same research showed equal or greater yields for organic compared to conventional throughout that time period (Delate, 2010, class lecture).

In 2008 the United Nations Conference on Trade and Development reported organic agriculture was “more conducive to food security than most conventional systems” and more sustainable in the long term. (United Nations, 2008). Since Iowa has significant production of organic livestock in the United States, it is poised to become a leader in the development of organic management practices for livestock.

While many comparison studies of organic and conventional yields pertain to horticultural or grain crops, it is critical to remember that livestock are an essential part of those systems. As stated by organic crop production specialist Kathleen Delate:

Linkages between crops and livestock are inherent in organic agricultural systems. Because organic livestock must be fed organic crops, for example, organic certification requirements tie together multiple producer networks from feed grain to livestock sales. Additionally, recycling of livestock wastes serves as a fertilizer in an organic system. (2010)

Furthermore, consumers continue to demand organic food, including meat and dairy products, citing a variety of reasons, including environmental stewardship, animal welfare, social justice, and personal and public health. Much debate exists as to whether these perceptions are the effects of clever marketing – or whether science supports the claims. Research studies and other pertinent information pursuant to these claims will be discussed briefly in the following section. Because integration of crop and livestock systems is an important aspect of organic production, the discussion will include horticultural and grain crops as well as livestock production.

### ***Environmental factors***

In terms of environmental sustainability, studies have shown that organic farming can build soil organic matter more effectively over the long term compared to conventional farming (Cambardella, 2008) and even no-till farming (Comis, 2007). It can also reduce soil erosion (Reganold et al., 1987) and water contamination from subsurface drainage (Oquist et al., 2007). In a presentation discussing comparison studies of conventional and organic agriculture, Reganold (2009) refers to Scialabba and Hattam's 2002 book *Organic Agriculture, Environment and Food Security*, which outlines a number of studies from Europe that show drastically lower leaching rates in organic systems, ranging from 36-60%

of rates in conventional systems. Decreasing nutrient pollution from agriculture is seen as essential from an ecological standpoint, and is important to several forms of economic activity based on aquatic and marine forms of life.

Further regarding soils, Cynthia Cambardella's (2008) work at Iowa State University shows improved soil structure, more biologically active organic nitrogen, higher concentrations of phosphorus, potassium, magnesium and calcium, and lower soil acidity in organic systems. The work of Pimentel et al. (2005), shows improved water holding capacity in organic systems, which could lead to improved production during weather extremes. Soils with higher water holding capacity result in more stored water reserves in times of drought, and in times of excess rain, more water can be contained in the soil, decreasing above-ground flow.

Furthermore, Maeder et al. (2002) and Azeez (2009) suggested organic systems have the capability to sequester more carbon from the atmosphere compared to conventional systems. This ecosystem service grows increasingly critical as attempts are made to combat global warming caused by greenhouse gases. Pimentel et al. (2005) also found lower fossil fuel inputs were required for organic systems due in part to manure fertilizer amendments.

Biodiversity above and below ground is improved in organic systems. Studies summarized by Kristiansen et al. (2006) showed 30-350% more plant diversity on organic farms, as well as higher variation in insect species, soil fauna and birds. According to Kristiansen, organic farms can be characterized as having more wildlife habitat and landscape diversity in general.



### ***Economic Factors***

Regarding the economics of organic farming, reports indicate that financial returns can be higher in organic crop and livestock systems than on conventional farms (Delate et al., 2002; Kriegl, 2007). Undoubtedly, transitioning to organic can be a financial challenge, as organic premiums are not available during the first two years of organic management. After the three-year transition period, however, returns can be higher on organic farms. According to Craig Chase (2008) of Iowa State University Extension and Agricultural Marketing Resource Center, organic farms can achieve more profit than conventional farms, offering beginning and limited-resource farmers an opportunity to succeed with a smaller land-base. Organic farming thus has the potential to increase the number of farms in rural Iowa, in turn supporting local community development (Chase, 2008, class lecture). Donham et al. (2007) argue that confined animal feeding operations, which are a central component of current conventional agriculture in the U.S., are an example of “economic concentration” that tends to move money out of rural communities, where smaller operations tend to result in recirculation of money within the community, resulting in a “richer civic and social fabric.”

### ***Animal and Human Health***

The remaining issues have to do largely with animal and human health. From a large-scale perspective, organic agriculture offers an alternative to conventional, high intensity, high stock-density livestock production. Space requirements and rules related to access of pasture and the outdoors dictate that organic livestock are housed less closely together. If all other aspects of management are equal, this should translate to lower animal stress levels, improved immune systems, and less chance for development and transmittal of disease. In organic systems, prevention of disease is key; the goal is to institute management practices

that do not by their nature mandate antibiotic use. In conventional agriculture, however, it has become common practice to administer antibiotics not only for the treatment of disease, but also in animal feed rations in order to increase productivity. This system of concentrated and intensified animal production relates to human health in at least three ways: antibiotic resistance, transmittal of bacteria and viruses from animals to humans, and food security related to centralization of the food supply.

The first has to do with antibiotic resistance. In June 2010 the Food and Drug Administration confirmed that subtherapeutic antibiotic use resulted in drug resistant bacteria that threaten public health. FDA Deputy Commissioner Joshua Sharfstein said, "We are seeing the emergence of multidrug-resistant pathogens ... FDA believes overall weight of evidence supports the conclusion that using medically important antimicrobial drugs for production purposes is not appropriate" (DeNoon, 2010). As a result, the FDA has recommended cessation of subtherapeutic antibiotic use (typically for increased weight gain) on farms. Preventive antibiotic use, though it is not allowed in organic systems, has not been questioned to the same extent by the FDA.

***Swine Production: An Example of the Problems with Concentrated Feeding Operations***

The issue of preventive antibiotics, especially in swine production systems, is complicated. Proponents of industrial agriculture point out that large-scale production, involving preventive antibiotic use, breeds less disease than forms of pig production where pigs are kept out of doors in smaller groups, where they are exposed to a wider range of pathogens since they come in contact with a variety of other wild and domestic species of birds and animals. At the same time, though, the biosecurity gains made by large operations have brought about new pathways for the evolution of disease. The prevalence of diseases

common in Iowa – Porcine Respiratory and Reproductive Syndrome (PRRS) and Postweaning Multisystemic Wasting Disease (PMWD), for example – show that pathogenic microbes have evolved to take advantage of even the types of conditions where biosecurity is of the highest priority (Morris et al., 2002). In Iowa, the density of pigs in some areas, and the continual transfer of herds from one area to the next, has resulted in such heavy disease pressure that few farmers are able to manage farrowing operations.

Heavy disease pressure brings up the second potential public health concern, which pertains to the transmittal of bacteria and viruses from animals to humans. For example, incidents of Methicillin-resistant *Staphylococcus aureus* (MRSA) are increasing in livestock animals. CC398 is a strain found in intensive production systems, where it can be transmitted to humans (European Center for Disease Control, European Food Safety Authority and European Medicines Agency, 2009). Resistant bacteria are not the only potential problem related to swine production systems. Pigs can act as “mixing vessel hosts” where human and avian influenza viruses can be genetically rearranged to produce new viruses since epithelial cells in the pig trachea contain virus receptors that are preferred by human and avian viruses (Gilchrist, 2007; Olson, 2002). This attribute can contribute to the genesis of new viruses that transmit zoonotically to humans, such as the H1N1 strain identified in 2009.

Third, it can also be argued that threats to farm biosecurity equal threats to human food security because of the extent to which the current food production is centralized. For example, the structure of the pork industry in the U.S. and Iowa has shifted drastically in the last 30 years. While the number of pigs in Iowa has remained fairly consistent (up approximately 5% from 1978 to 2007), the number of farms with pigs on them has decreased

by 86% in the same amount of time (USDA NASS, 2008). The vertical integration of the swine industry, much of which took place in the 1990s, shifted production methods away from independent, farrow-to-finish farms toward integrated networks of producers, shippers, and processors contracted by large companies (Honeyman and Duffy, 2006). While the number of pigs in Iowa has increased only 5% since 1978, the number of pigs sold has increased 24% from 22.1 million to 27.3 million (USDA NASS, Historical Highlights, 2007). This change has resulted in large part from the increasing number of feeder pigs brought into the state from Canada and elsewhere to be finished in closer proximity to packers and inexpensive feed (Honeyman and Duffy, 2006). The high concentrations of hogs we see in Iowa today have led to concerns related to biosecurity. A fast-spreading disease could eliminate significant portions of the food supply, as demonstrated on a smaller scale by the 2010 salmonella contamination of eggs produced in Iowa (U.S. Food and Drug Administration 2010). Recognizing the vulnerability inherent in a centralized food production system after the 2001 terrorist attacks on the United States, the federal government directed federal agencies to take steps to assure critical infrastructure protection (CIP) in the Homeland Security Act of 2002. Contamination of the food supply, accidental or intentional, poses real human health and economic risks.

### ***Effects on Individual Health***

The other health related issues exist on the scale of the individual. With regard to crop production, pesticide residues in food products are linked to attention problems (Eskenazi et al., 2010) as well as cancers of the ovary and lymph systems (Steingraber, 1997). A study by Baker et al. (2002) showed organic foods contained roughly one-third the pesticide residues of conventionally produced foods, and work by Lu et al. (2006) and Curl et

al. (2002) showed similar results. Magkos et al. (2006) argue these differences are not significant since both levels are below regulation guidelines, but concern persists among the public and others researching the issue. On a different note, pesticide-related illnesses have long been reported among farm workers (Kahn, 1976) and represent an “important cause of acute morbidity among migrant farm workers in California (Das et al., 2001).

And, with regard to animal production, confined animal feeding operations are central to convention agriculture in the United States as mentioned. However, Donham et al. (2007) provide an extensive list of research documenting ill effects on the health of farm workers and those living in close proximity to those operations. The health of farm workers and rural people not only represents a personal health issue, but also an issue of social justice that cannot be ignored when considering the external costs of our current food production system.

### ***Nutritional Concerns***

In terms of nutrition, some studies indicate that organic foods are no better than conventional ones (Schutz & Lorenz, 1976; Moreira et al., 2005), but a growing body of research (much of which has been cataloged on the Leopold Center for Sustainable Agriculture Web page, 2007) shows increased nutritional value in organic fruits and vegetables due to significantly higher concentrations of vitamin C (Wszelaki et al., 2005; Rembialkowska et al., 2007; Hajslova et al., 2005; Hallman & Rembialkowska, 2007; Worthington, 2001), and minerals such as potassium, magnesium, phosphorus, sulfur, copper, and iron (Worthington, 2001; Perez-Lopez et al., 2007; Wszelaki et al., 2005). Higher levels of antioxidants, as much as 120%, were reported by Ren et al. (2001), and numerous other studies have shown increased antioxidants and other health-promoting compounds in organic foods (Carbonaro et al., 2002; Ribiero et al., 2008; Fauriel et al., 2007;

Young et al., 2005; Amor et al., 2008; Wang et al., 2008; Hallman and Rembialkowska, 2007). Lower nitrate levels in organic food were reported by Worthington (2001) and Lester et al. (2007).

In animal products, increased conjugated linoleic acid (CLA) (Kraft et al., 2003; Derveshi et al., 2010) and Omega-3 fatty acids (Ponnampalam, 2006) have been reported in animals fed a grass-based diet. Although specific rules regarding access to pasture have not been a part of organic production in the past, new regulations lay forth specific guidelines for pasture access by ruminants in organic systems. By June of 2011 all organic farms in the United States will need to have implemented a grazing plan into their management systems (National Organic Program, 2010). Omega-3 fatty acids are seen as beneficial due to their role in the prevention of coronary heart disease (Harper and Jacobson, 2001; Etherton, 2003), and CLA has been linked to improved immune function (Albers et al., 2003; Song et al., 2005) and reduced body fat levels (Thom et al., 2001). Also, lower levels of total fats occur in grazing animals compared to ones that are grain fed (Daly et al., 2010).

Ultimately, a wide suite of variables (climate, geography, social factors, producer knowledge, etc.) will affect the outcome of any farming system. However, research to date suggests that further incorporating well-managed organic farms into the world food system can potentially help to alleviate a variety of environmental and social problems.

### **1.3 Challenges to Organic Agriculture**

Significant infrastructural challenges exist with regard to organic production, one of which relates to the availability of veterinary care. A 2004 survey conducted by Jim Riddle found that four of the top five research needs in Minnesota organic livestock systems were related to health care. Contrary to the beliefs of some, a toolbox for organic herd care does

exist. Some practitioners utilize natural treatments such as medicinal plants and mineral remedies for livestock, as well as NOSB-approved synthetic treatments (Karreman, 2007). Paul Dettloff documents successful natural treatments for each of the main body systems in cattle, sheep, and goats and lists the following ten essential pieces of the “Organic Tool Kit”: tinctures, homeopathy, essential oils, aloe products, whey products, botanicals, vitamins and antioxidants, trace and macro elements, and probiotics (2009). Other veterinarians are making use of homeopathy (Shaeffer, 2003) and acupuncture/acupressure (Lindley, 2006). Still, the National Center for Appropriate Technology’s Organic Livestock Workbook states, “Currently, the number of practicing veterinarians that understand the NOP (National Organic Program) Regulations and are trained in alternative modalities are still few and far between” (2004).

Little research has been done in Iowa to document the needs of organic farmers and veterinarians with regard to herd health care for organic livestock. Riddle’s 2004 survey indicated that many of Minnesota’s organic farmers’ largest concerns were related to herd health, but no surveys have been conducted in the Midwest to directly assess the quality and availability of veterinary care for organic producers. Recent work by Yaeger et al. (2009) seeks to address veterinary needs of niche market swine producers in the Midwest and indicates that disease pressures vary from one production system to the next. More work is needed to obtain more specific knowledge related to various species in organic systems. Laura Paine’s 2007 Survey of Organic Farmers in Wisconsin addressed livestock issues in general, but did not look specifically at the need for veterinary care. Research conducted this year (2010) by Martha Rideout, DVM, in Wisconsin directly addressed veterinary medicine as it relates to organic agriculture. Rideout surveyed 108 veterinarians in Wisconsin to

assess their needs and attitudes pertaining to organic livestock production and their roles within those systems, as well as their ideas regarding the place of organic training in veterinary education. This study showed that 60% of veterinarians completing Wisconsin's Department of Agriculture, Trade and Consumer Protection (DATCP) training for organic dairy personnel expressed an interest in receiving additional training on specific holistic treatments for use in dairy cattle. Forty-two percent expressed an interest in learning more about how systems management can be used on organic dairy farms. While Dr. Rideout's survey revealed much in terms of veterinary attitudes related to organic dairying in Wisconsin, more research is needed on other production systems and in other states.

Survey research has also been done in Europe to document the experiences of farmers and veterinarians in organic systems. In the U.K., Hovi & Kossaibati (2002) iterated the importance of veterinarian involvement in organic farm systems. Similarly, a report by Sustaining Animal Health and Food Safety in Organic Farming (SAFO), a European organization with members from 26 European Countries, also pointed to a need for veterinary training and education on organic farming, as well as veterinary involvement with certification bodies (Hovi et al., 2004).

#### **1.4 Veterinary Care: Current Educational Frameworks**

Some continuing education regarding organic veterinary care exists. For example, Wisconsin's Department of Agriculture, Trade and Consumer Protection offers training courses for organic dairy personnel (Rideout, 2009) and some veterinary conferences, such as the Boundary Waters Veterinary Conference and Organic Valley's yearly veterinary workshop address antibiotic free and organic herd health needs. The Registry of Approved



Continuing Education (RACE), a program of the American Association of Veterinary State Boards (AABSB), approves continuing education (CE) providers and programs.

In most colleges of veterinary medicine, organic goals and treatment options are not a significant part of the curriculum, but some herd health care knowledge can be obtained from the home University and University Extension (Dettloff, personal communication, 2009). Currently, much veterinary understanding of organic systems and treatment options come from word of mouth and veterinarian-to-veterinarian mentorship (Jodarski, personal communication, 2009), or through books and Web sites that specialize in the topic. Since little work has been done in the Midwest to directly assess the results of this educational framework, this research seeks to document the system's impact on farmers and veterinarians.

With these factors in mind, I undertook this research with funding from the Leopold Center for Sustainable Agriculture. The project has the following objectives:

- 1) Collect data that accurately represent the needs and experiences of Iowa's organic livestock farmers in terms of veterinary care.
- 2) Collect data that accurately represent the attitudes and experiences of Iowa's production animal veterinarians pertaining to the need for education in organic systems.

This thesis reports on the data collected to address these objectives.

## **CHAPTER 2. Research Methods**

This chapter outlines the methods used to meet the objectives described in Chapter 2. Timelines are also provided, which highlight main checkpoints for the implementation of each survey. First, research methods for the producer survey are presented, followed by methods for the veterinarian survey.

### **2.1 Producer Survey**

To accomplish Objective 1, I developed a mailed survey to assess farmer experiences and needs in Iowa utilizing a variation of Salant and Dillman's method (1994) for optimal participant response. The overall purpose of the questionnaire was to provide greater understanding of producer perceptions of the quality and availability of veterinary care for organic production systems in Iowa, and to assess how significantly veterinary obstacles impact organic livestock production. It also addressed how veterinary needs are typically handled on the farm, and what tools producers use to meet herd health needs. The questionnaire is reproduced in the Appendix, along with the cover letter accompanying it.

Feedback from four Midwest organic farmers who pretested the questionnaire improved the final version. The survey population was identified from a list of USDA Certified Organic livestock producers obtained from Michael Smith of the USDA Agricultural Marketing Service office in Washington, D.C. (USDA-AMS, 2009). Farmers who were organic but exempt from certification because of sales less than \$5,000, farmers who practiced something "near organic," antibiotic free producers, and other groups were not included since there was no comprehensive list of such producers in Iowa. For the purpose

of this research, the word “organic,” when in reference to production in the United States, refers to USDA Certified Organic, as opposed to exempt, unless otherwise noted.

Because the USDA-AMS list was not maintained by the USDA in 2010, the 2009 list was cross-checked with the online producer lists from each Iowa certification agency in 2010 before the surveys were mailed, and two addresses were added as a result of this cross-check. Prior to survey implementation I submitted materials to the Institutional Review Board (IRB), which outlined my research objectives, described my methodology, and explained how I would protect the subjects of my research. This application included my questionnaires and cover letters, and was granted on March 29, 2010.

The mailing in early April of 2010 was preceded by a postcard mailing to announce the survey and prepare respondents for its arrival in their mailbox, consistent with the Salant and Dillman model of survey method for mailed surveys. Six postcards were returned because of invalid addresses, leaving 162 producers still in the pool.

Ninety producers responded, but 15 were not currently raising USDA certified organic livestock and were excluded from the analysis. These 15 producers may have returned to conventional farming, no longer are farming, or are farming organically in an exempt status. The responses from 75 remaining producer surveys comprised the data set for this project’s analysis.

In early May, an identical survey was mailed to those who had not yet responded, again requesting participation. When mailed, the survey packets included an 8-page survey booklet, a postage paid return envelope, and a cover letter explaining the purpose of the survey and outlining required information regarding confidentiality and the voluntary nature of participation. Survey implementation is outlined in Table 3.

Table 3. Producer survey implementation timeline

	Date
Survey construction	Feb. – March 2010
Pre-test	Mid March 2010
IRB approval	March 29, 2010
Introductory postcard mailed	April 6, 2010
First survey and cover letter mailed	April 15, 2010
Second survey and cover letter mailed	May 3, 2010

The final response rate was 55.6%. The timing of the survey may not have been ideal for producers who were preparing for spring planting, but a spring mailing was necessary due to the window of opportunity between the disbursement of research funding and the target project end date. Response rate is summarized in Table 4.

Table 4. Summary of response rates for producer survey

Number obtained from USDA-AMS list	166
Number added after cross-check	2
Less undeliverable surveys	6
Net valid mailings	162
Returned surveys	90
% Response rate	55.6%
Less respondents no longer producing organic	15
Number of valid surveys	75

## 2.2 Veterinarian Survey

Objective 2 was also accomplished by a survey mailed to all practicing food animal production veterinarians in Iowa, as determined by a list provided by the Iowa Veterinary Medical Association, who sanctioned the survey and encouraged member participation. While this is not a complete list of Iowa production animal veterinarians, it does represent an estimated 90% of the target population (James West, personal communication, April 2010). This survey requested information on veterinarian attitudes, confidence and preparedness

with regard to organic production, and opinions regarding the place of organic education in colleges of veterinary medicine, continuing education, and within veterinary associations and other networks dealing with organic and sustainable agriculture. Methods similar to the producer survey were used, with pilot testing by three Midwest volunteer veterinarians with background in organic agriculture. After modifications were made based on their feedback, the revised materials were resubmitted for IRB approval, which was granted on June 8, 2010.

A four-part mailing was used for this survey, which occurred in June and July of 2010. A follow-up postcard was mailed to members of the veterinarians to thank those who had responded and encourage participation from those who had not. Lastly, a final survey packet was mailed to those who had not responded, requesting their participation the final time. Survey implementation is outlined below (Table 5).

Table 5. Veterinarian survey implementation timeline

	Date
Survey construction	Feb. – March 2010
Pretest	Mid March 2010
IRB initial approval	March 29, 2010
IRB approval of modified materials	June 8, 2010
First postcard mailed	June 16, 2010
First survey and cover letter mailed	June 22, 2010
Second postcard mailed	July 6, 2010
Final survey and cover letter mailed	July 19, 2010

Three hundred thirty-seven veterinarians responded to the survey for a total response rate of 69.2%. Forty-one veterinarians indicated they did not currently provide services to producers raising food animals and were excluded from the analysis. These forty-one practitioners likely fit into two categories: those who have retired or who now focus solely on companion animal medicine. A summary of response rates can be found in Table 6.

Table 6. Summary of response rates for veterinarian survey

Number of names on IVMA list	493
Less undeliverable surveys	6
Net valid mailings	487
Returned surveys	337
Response rate	69.2%
Less respondents not currently serving target	41
Number of valid surveys	296

Data for both surveys were processed and coded using SPSS software to provide descriptive statistics from the results. The open-ended responses were transcribed. Survey results are presented in Chapter 3.

## CHAPTER 3. Research Findings

This chapter reports the results of the two surveys. Descriptive statistics are provided for each, as well as transcribed responses to open-ended questions. Results of the producer survey are described first, followed by information from the veterinarian survey.

### 3.1 Producer Data

Producer ages range from 23 to 74 years with a mean of 50.5. The majority (94.6%) were male and the rest female. The mean length of time spent farming was 22.1 years, with responses ranging from 3 to 62 years.

The questions are organized into two main categories for this analysis: the first section reports information about farm operations and the second section reports on the attitudes and experiences producers have related to organic production.

#### *Part 1: Farm Operations*

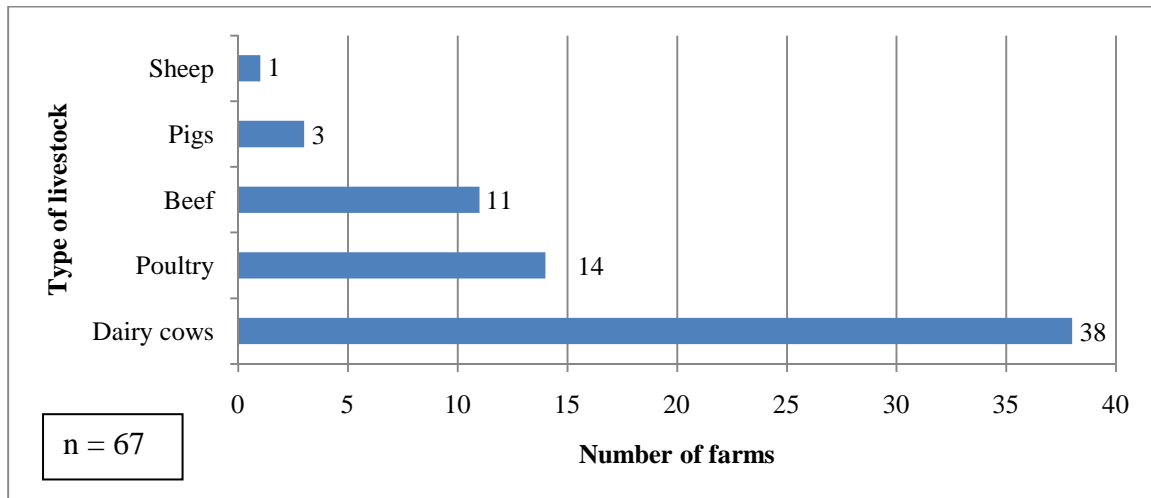
The questionnaire first asked for the number of each type of organic livestock per farm. Each main animal category (dairy cows, beef, poultry, pigs, sheep, and goats) was found on the certified organic farms of these producers. Table 7 shows the ranges and means for types of animals produced in an average year. The poultry category did not differentiate between types of birds or whether chickens were produced for eggs or meat.

Table 7. Certified organic animal type and numbers per farm annually in Iowa (n=67)

	Range	Mean
Dairy cows	50-200	49.5
Beef cattle	13-250	68.4
Pigs	50-5750	1,241.7
Poultry	100-34,000	13,343.5
Sheep	210	210
Goats	150	150

Dairy cows were reported as the top revenue generator on the majority of farms, followed by poultry and beef (Figure 1).

Figure 1. Top livestock revenue generators on USDA Certified Organic farms in Iowa in 2009



When asked how long the livestock on each farm had been certified organic, answers ranged from 1-30 years. Since USDA certification has only arisen in the last decade, some farmers evidently responded with a different system of certification in mind (state-level or some other voluntary certification), or else their answers reflected the number of years the farm had been operated according to what they considered organic principles, which was the next question in the survey. Producers claimed their farms had been operated according to organic principles from 2-50 years, averaging 12.5 years.

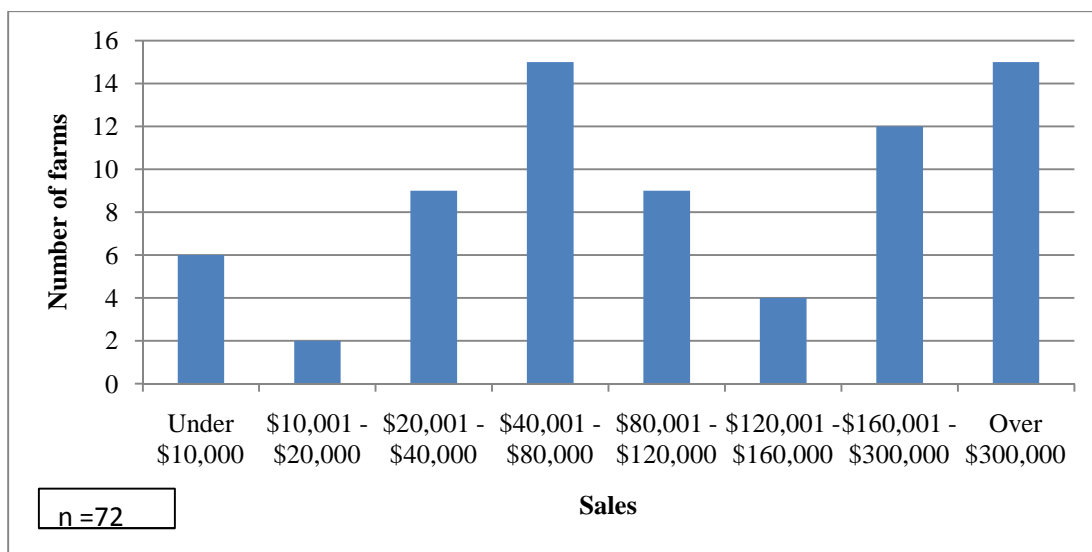
The survey also recorded the most common herd health challenges for each type of livestock. In dairy the most frequently reported problem was mastitis/high somatic cell count, reported by 17 of 38 producers. Other dairy problems included foot problems (foot rot,



hairy heel wart, and sore feet), reported by six producers; parasites (5); pinkeye (3); calving difficulties (3); pneumonia (3); milk fever (3); scours (3); bloat (1); displaced abomasums (1), and Johne's (1). In beef herds, reported challenges included parasites (5); milk fever, calving, and pinkeye (3 each); scours (2); and acidosis, pneumonia, bloat, hoof problems, mastitis (1 each). Parasites were reported in swine herds (2), and one goat producer reported pneumonia. Two poultry producers reported problems with cannibalism.

Organic livestock product sales on each farm are displayed in Figure 2. These numbers can be put into perspective by considering the USDA Economic Research Service's definition of a small farm, which is taken from the National Commission on Small Farms (USDA ERS 2005). By this rubric, a farm with sales less than \$250,000 in annual sales is considered a small farm. While the data below only include livestock product sales, and exclude crop sales, we can see that at least 20% of organic farms in Iowa do not fit into the small farm category since at least 15 out of the 75 had sales of over \$300,000 in 2009.

Figure 2. Organic livestock products sales reported by Iowa organic producers for 2009



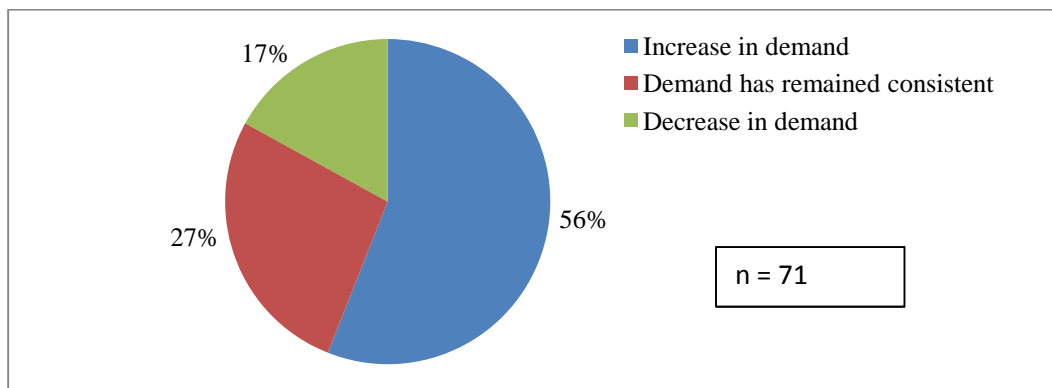
Nearly all respondents (96%) work full-time on their farms. The survey also asked how many people are employed on the farm. The number of full-time workers on respondents' farms ranged from 0-6, and part-time help ranged from 0-15 people. The answers to this question were problematic because it did not adequately tease out the contribution of family labor. For example, some producers listed their family as helping full time on the farm. Some producers also gave answers such as "my family" without indicating a specific number. The questions would have yielded more valuable information if written as, "Besides yourself, your spouse, and your children, how many people are employed full-time/part-time on your farm?"

Nearly half the respondents (48.2%) claimed to be the sole provider of hands-on care for their livestock, with the remaining sharing care with 1-8 additional people.

### ***Part 2: Experiences and Attitudes Related to Organic Livestock Production***

Over half of the participants (56%) had experienced an increase in demand for organic livestock products in the last ten years (Figure 3).

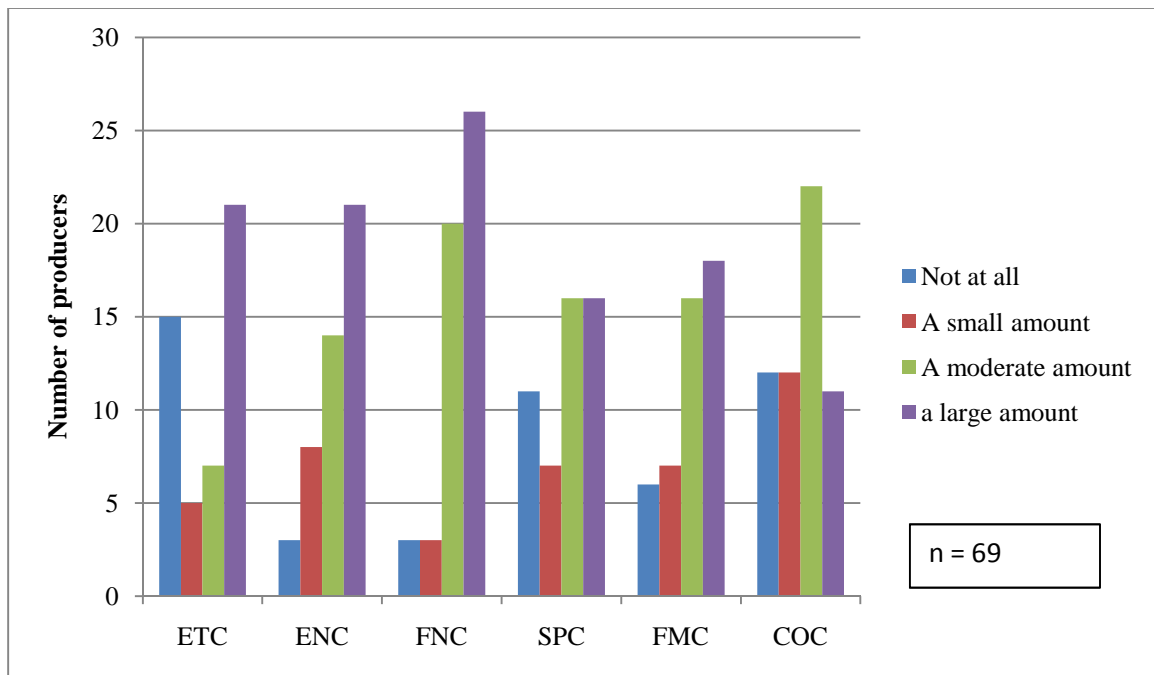
Figure 3. Perceived changes in demand for organic consumer products in the last ten years



Producers who indicated a change in demand were asked what they believed accounted for it. Of those who reported a decrease, 100% cited the economy as the main cause. Among those who reported an increase, all related it to increased consumer awareness regarding food origins and production processes.

To obtain information regarding the motivating forces for on-farm decision-making, participants were asked how much six pre-selected considerations influenced their farm management decision (Figure 4). Financial considerations were the most important decision-making factors, followed by environmental and family considerations.

Figure 4. Influences on on-farm decision making reported by Iowa organic livestock producers

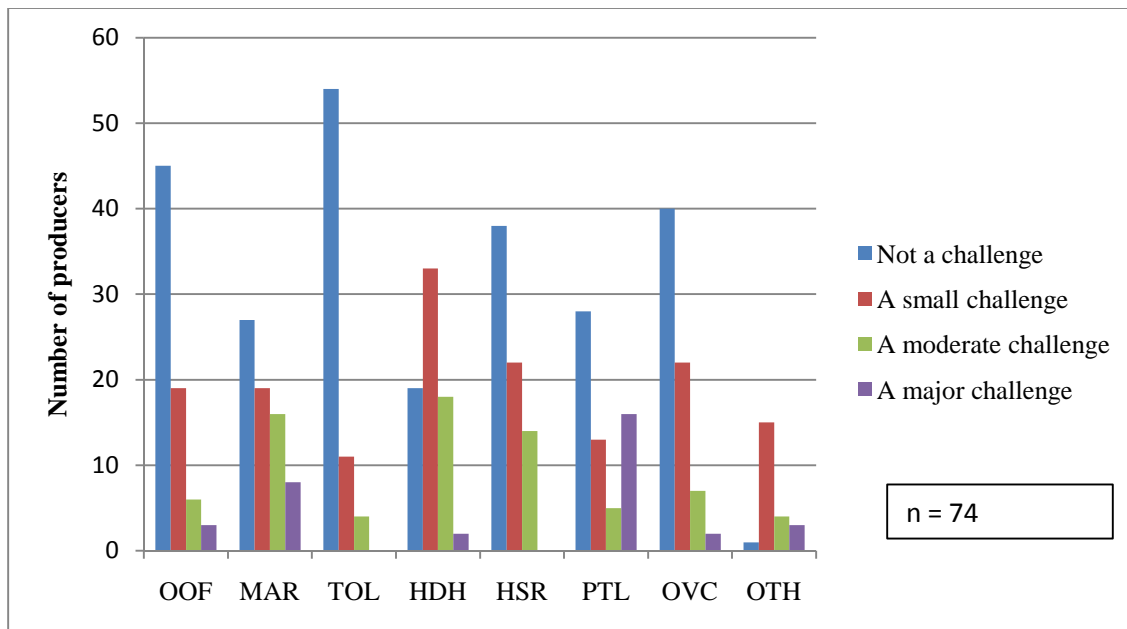


\*\* ETC=Ethical Considerations; ENC=Environmental Considerations; FNC=Financial Considerations; SPC=Spiritual Considerations; FMC=Family Considerations; COC=Community Considerations

Producers responded to a series of questions regarding the primary challenges of organic livestock production (Figure 5). Proximity to a processing facility was seen as the

greatest challenge, followed by difficulties in marketing. Herd health and veterinary care were cited by most as “not a challenge” or “a small challenge.” Mean scores for each item reveal the following order from most challenging (4) to least challenging (1): proximity to locker (2.2); marketing (2.1); herd health (2.0); meeting housing or space requirements (1.7); and obtaining veterinary care (1.6). Specific challenges reported in the “other” category included fly control and disease, both of which relate to herd health, and marketing for organic and grass-fed products, which relates to marketing. Each of those four mentions indicated the same level of challenge for the categories they referred to in their “other” comments. Another “other” response noted organic bookkeeping requirements posed a moderate challenge. The remaining “other” responses were not accompanied by specific comments or details.

Figure 5. Producer reported challenges to organic livestock production in Iowa

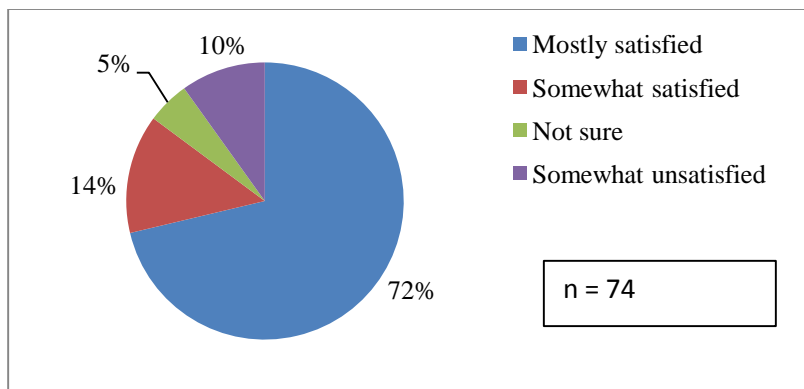


\*\* OOF=Obtaining organic feed; MAR=Marketing; TOL=Transportation of livestock; HDH=Herd health; HSR=Housing and space requirements; PTL=Proximity to locker; OVC=Obtaining veterinary care; OTH=Other

The rest of the survey dealt specifically with issues related to veterinary care and herd health maintenance.

When asked how satisfied they were with the quality of veterinary care available to them, most producers (72%) said they were “mostly satisfied.” No producers claimed to be “mostly unsatisfied (Figure 6). If put into a scale where 1 represents the lowest level of satisfaction and 5 equals the highest, the mean level of satisfaction is 4.4.

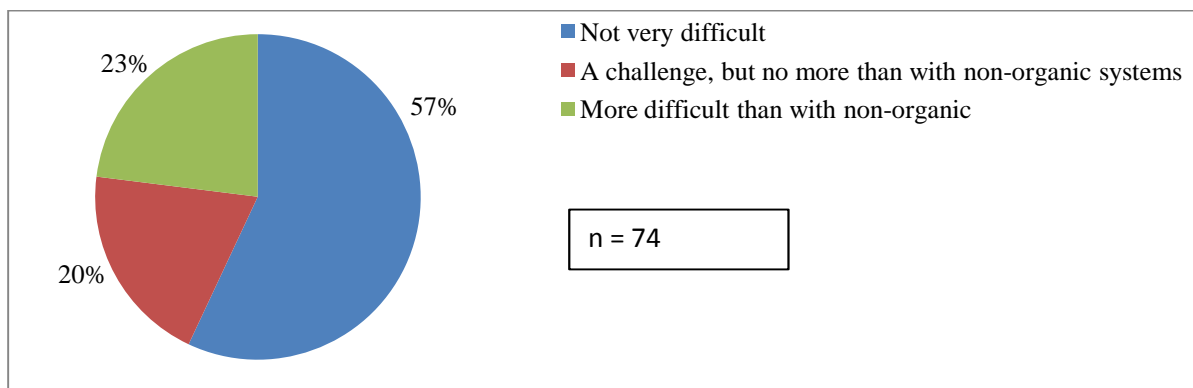
Figure 6. Producer satisfaction with available veterinary care for organic livestock in Iowa



It is worth noting that producers could have been expressing their levels of satisfaction towards their own local veterinarian, a more distant one, or their own treatment abilities. The value of cross tabulations was limited due to the small numbers of responses per category, but these analyses did not show producer satisfaction to be greatly impacted by species produced, producer age, or length of time farming.

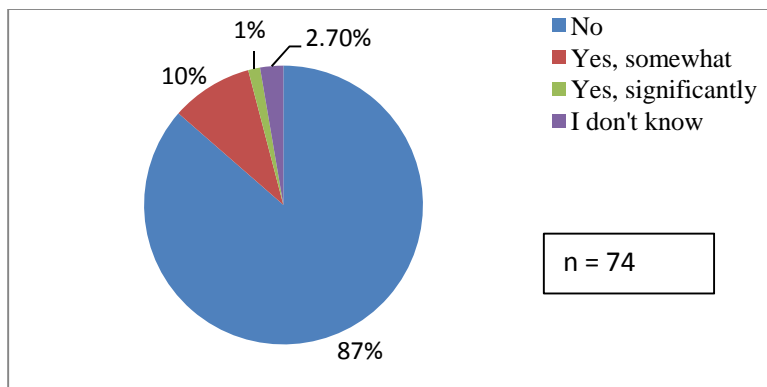
When asked how big a challenge it is to obtain quality veterinary care, most (57%) considered it “not very difficult” (Figure 7).

Figure 7. Producer reported level of challenge obtaining veterinary care for organic livestock



When asked if their farm's profitability is limited by lack of veterinary care for their organic livestock, producers overwhelmingly indicated that their profitability has not been limited by lack of access to veterinary care (Figure 8).

Figure 8. Veterinary care options as a limitation to profitability



Producers were also asked where they obtain the majority of routine and emergency veterinary care. Most handle routine needs on their own but rely on a local veterinarian for emergency needs (Figure 9).

Figure 9. Ways organic livestock producers handle routine and emergency veterinary care

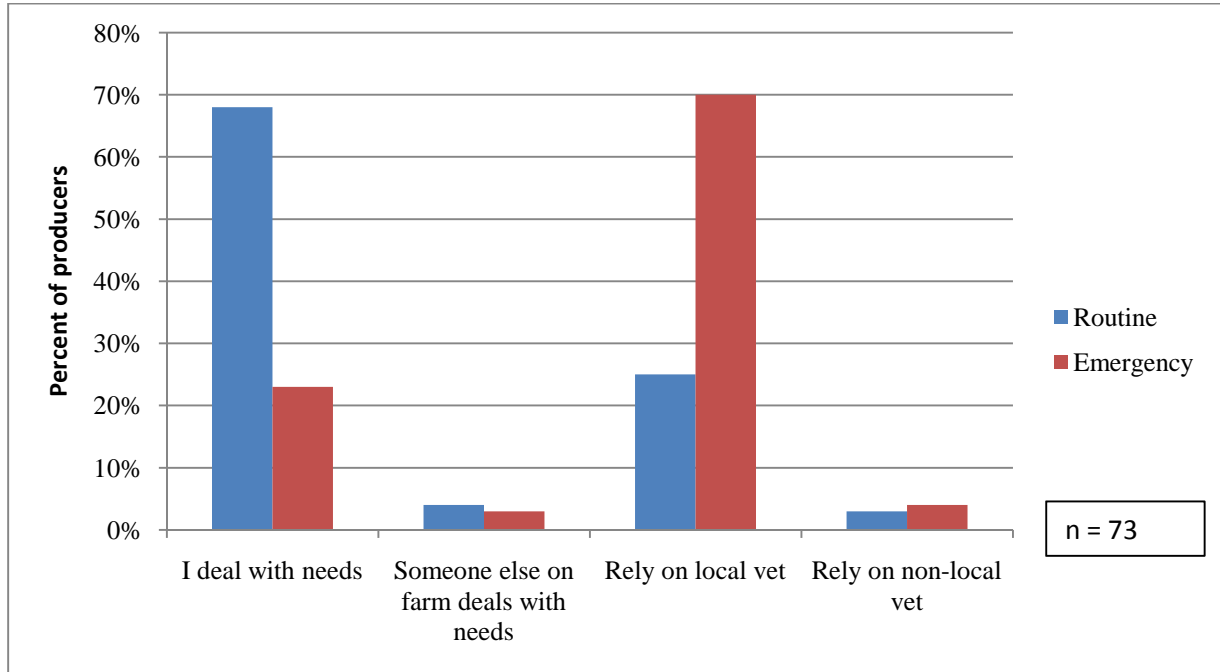
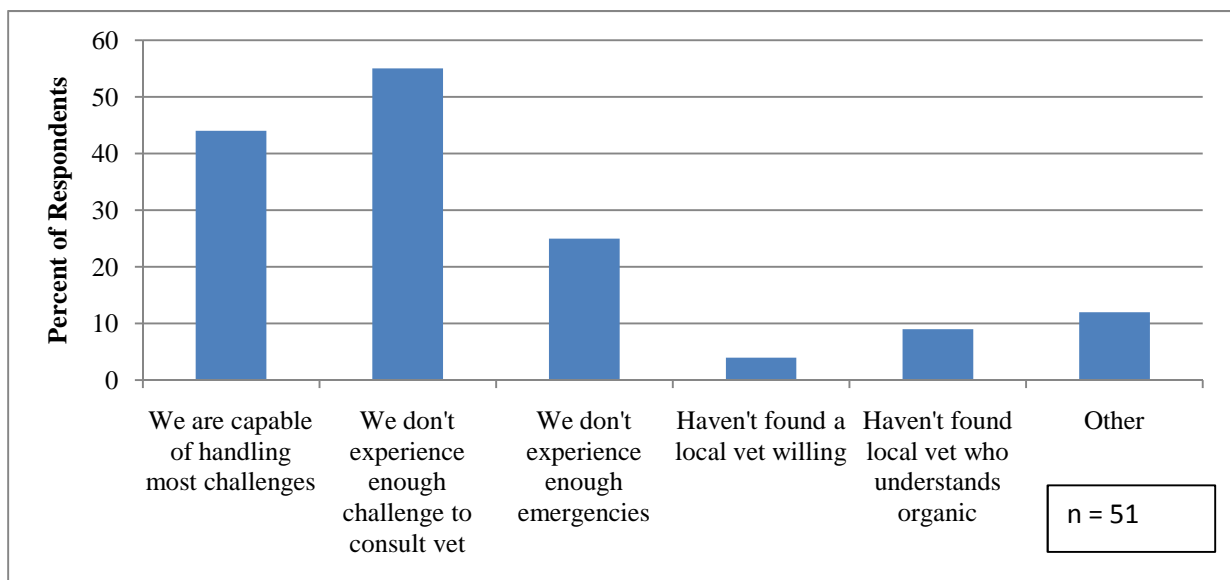


Figure 10 depicts reasons why those who deal with the majority of veterinary needs make this choice themselves.

Figure 10. Reasons organic livestock producers handle veterinary needs on-farm



These producers do not require a significant amount of veterinary care because either 1) they do not experience a significant number of health challenges, or 2) they are capable of handling most difficulties on their own. These findings contrast with veterinarians' estimation of the situation, described later in this analysis.

The following set of questions related to producers' opinions based on their experiences with local veterinarians. Producers were asked to indicate their level of agreement with a series of five statements. Table 8 shows a summary of mean responses, where 1 indicates the strongest level of agreement and 5 indicates the lowest level of agreement. In general, producers tended to agree with statements that veterinarians were willing and able to meet their needs.

The results of the first four questions regarding producer perceptions of veterinary knowledge should be kept in mind for comparison to the veterinarians' estimation of their own knowledge, which follows later in the analysis. Producers display a more positive perception of veterinary knowledge of organic care than do veterinarians themselves. However, the extent to which producers find veterinarians supportive of organic production is closer to the level of support voiced in the veterinarian survey.

Table 8. Extent of agreement with five statements about local vets

Extent of agreement to the following comments (n = 70)	Mean response
"Local vets know how to deal with sick animals under organic guidelines."	2.6
"Local vets know how to deal with injured animals under organic guidelines."	2.4
"Local vets have an adequate knowledge base to deal with organic livestock."	2.7
"Local vets have the products necessary to deal with organic livestock."	2.9
"Local vets are supportive of organic production."	2.4

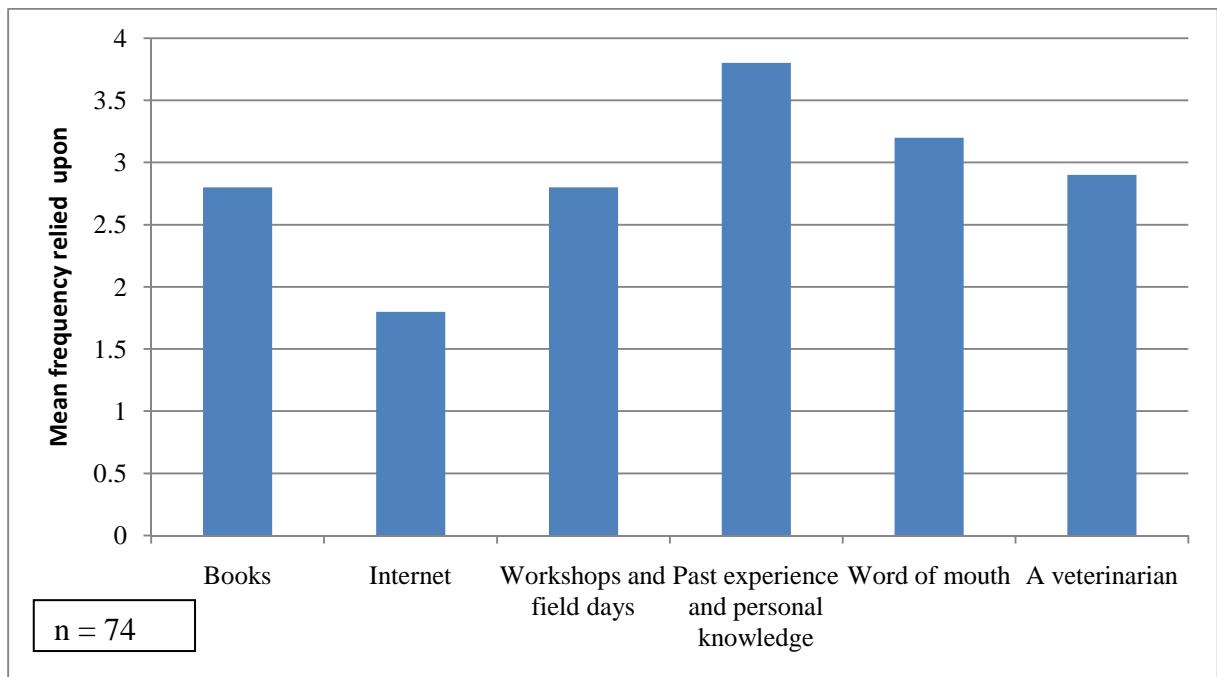
1=Highest level of agreement; 5=Lowest level of agreement



Producers were then presented a bank of information sources for dealing with common health problems and asked which sources they relied upon and with what frequency. Most people relied on “past experience and personal knowledge” (81% rely on this “often”), and “word of mouth” (35% rely on this “often”). Organic veterinary workshops and field days, and veterinarians were relied on “sometimes” by 63% and 61%, respectively. Mean responses are given in Figure 11, where a number 4 on the y-axis represents “often,” 3 represents “sometimes,” 2 represents “rarely,” and 1 represents “never.”

Experiential knowledge was the most common source of information, followed by word of mouth, a veterinarian, books, and workshops and field days.

Figure 11. Sources of health information relied upon by organic livestock producers in Iowa



When asked about membership in farming and marketing organizations that provide education related to organic livestock production, about 40% of producers claimed membership in such organizations, with 60% of those indicating membership in Organic

Valley/Organic Prairie/CROPP Cooperative and 27% indicating membership in Practical Farmers of Iowa. Other cited organizations included: Midwestern Organic and Sustainable Agriculture Education Service (MOSES) (mentioned by 3); and Global Organic Alliance, Midwestern Bio-Ag, National Farmers Organization, Farmers Henhouse, and Oregon Tilth (mentioned by 1 each).

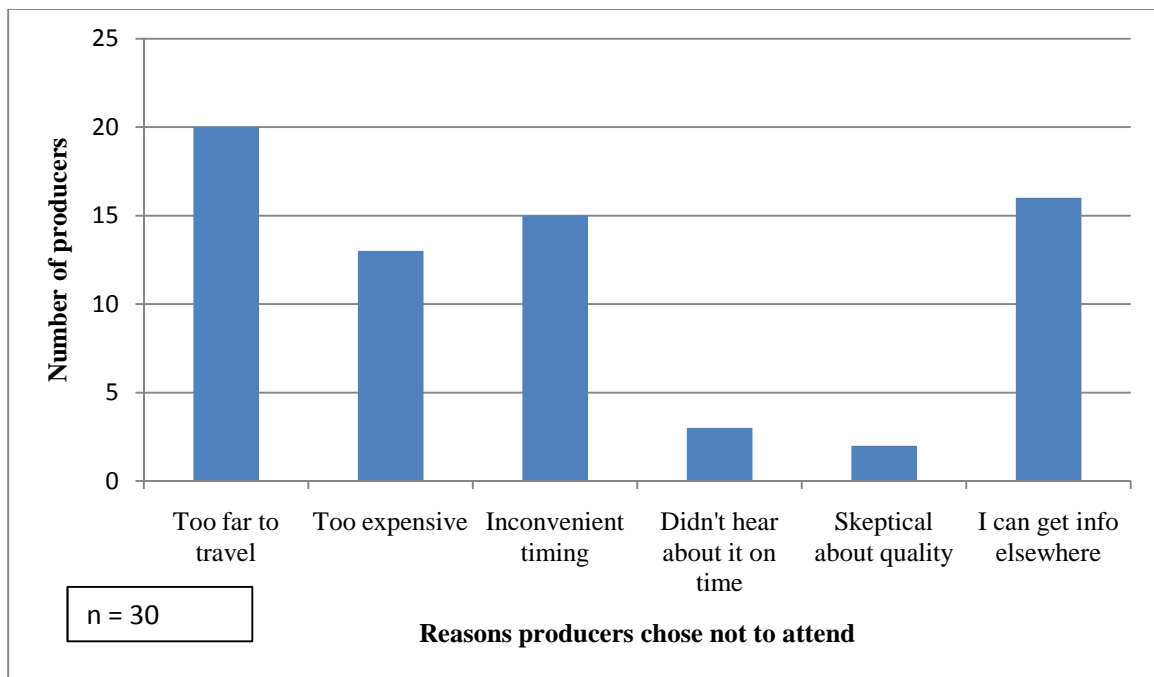
About 32% of producers are involved with organizations providing publications related to organic livestock production. The most common organizations were Organic Valley/Organic Prairie/CROPP Cooperative (mentioned by 14), MOSES (2), and Crystal Creek (3). Other responses included Acres USA, MOSA, Practical Farmers of Iowa, ATTRA, OFRF, eOrganic (eXtension), and the Stockman Grass Farmer (1 mention each). It is likely that producers are not actively “involved with” all of these information sources in a membership sense, but some still found it important to indicate reliance on these information sources nonetheless.

About 61% of producers indicated they had attended workshops dealing with organic herd health care. Over half (51%) cited workshops put on by Organic Valley; one-third mentioned assorted events that featured Paul Dettloff, a Wisconsin veterinarian who currently organizes yearly veterinary conferences for Organic Valley. Other workshops or field days cited were put on by Midwestern Bio-Ag, Practical Farmers of Iowa, Crystal Creek, University of Nebraska’s Alternative Herd Health Workshop, feed companies, Upper Midwest Organic Farming Conference, Pennsylvania Sustainable Ag Association, MOSES, Iowa State University’s Annual Organic Conference, and Farmers Henhouse.

Nearly all (95%) of participants who had attended at least one of these meetings expressed satisfaction, and the remainder (5%) said they were undecided about the quality of the information provided.

The major reasons producers gave for choosing not to attend workshops and conferences included travel distance, ability to obtain information elsewhere, and timing of the events (Figure 12).

Figure 12. Reasons producers choose not to attend workshops and conferences related to herd and flock veterinary care



Respondents were asked to name a veterinarian who had been especially helpful in providing veterinary care for their organic livestock. Out of 48 respondents, 83% claimed Iowa vets, with the remaining 17% from Wisconsin and Minnesota.

The survey concluded by giving producers the opportunity for further comments. The following themes were discussed: the closest (or “only available”) vets for organic livestock not being local (4); need for peer reviewed research and scientifically-backed

veterinary treatments for organic livestock (2); parasite problems (2); organic market being flooded by “bogus” organic products due to lax oversight and regulation (2); and good support from ISU Extension, specifically the swine program specialist.

### **3.2 Veterinarian Data**

The data analyzed from the veterinarian survey are drawn from 296 food animal production veterinarians in Iowa. The sample list for this study was obtained from the Iowa Veterinary Medical Association, who sanctioned the survey. While this is not a complete list of Iowa veterinarians, it represents approximately 90% of the target population (James West, personal communication, April 2010). Six names on the original list of 493 resulted in non-deliverable mailings, leaving 487 legitimate mailings. Three hundred thirty-seven veterinarians responded to the survey, for a total response rate of 69.2%, but 41 of these indicated they do not currently serve food animal producers so their surveys were not included in this analysis. The 296 surveys analyzed represented veterinarians who served areas where the mean population of the town where the practice was located was 5,335 people. Males accounted for 86% of the population, and females the remaining 14%. The ages of participants ranged from 27-78 years with a mean age of 50.2 years. Mean length of practice was 24.6 years, ranging from 1-55 years.

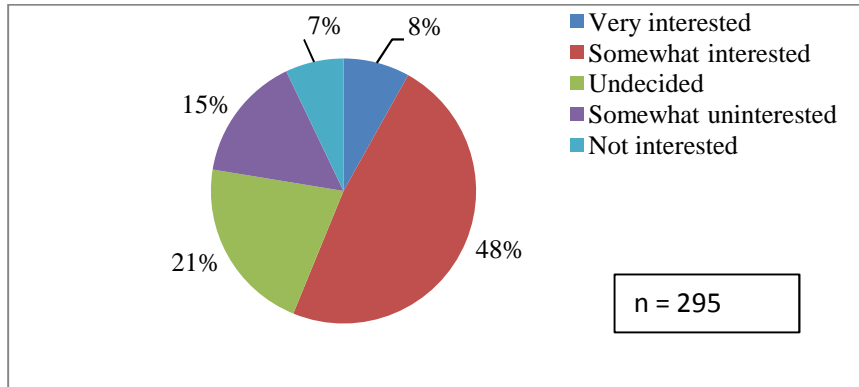
The survey analysis is divided into two main parts: one on Organic Agriculture Attitudes, Knowledge and Involvement, and the second About Your Practice.

#### ***Section I: Organic Agriculture Attitudes, Knowledge and Involvement***

The survey began by asking veterinarians their level of interest in organic livestock production (Figure 13). Over half (56.2%) indicated some level of interest. On a scale of 1-5

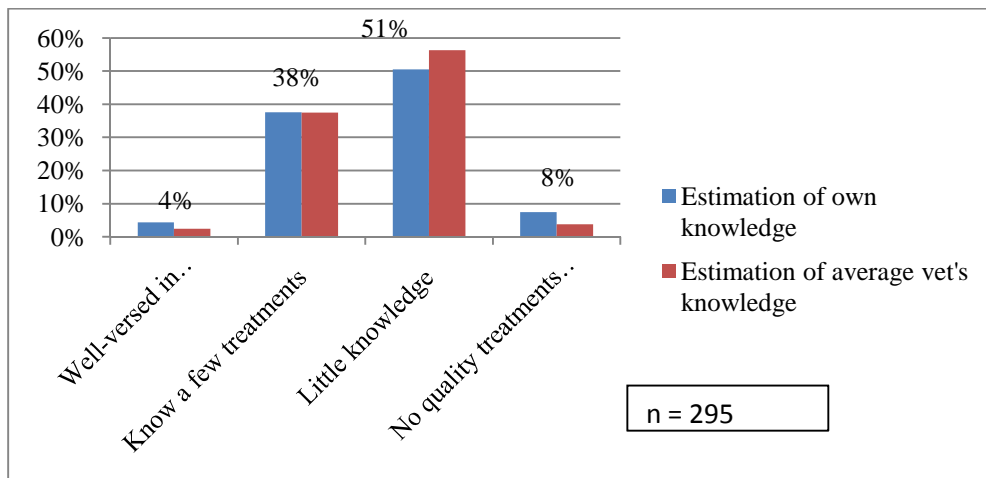
with 1 indicating complete lack of interest and 5 the highest level of interest, the mean response was 3.3.

Figure 13. Level of interest in organic livestock production reported by veterinarians



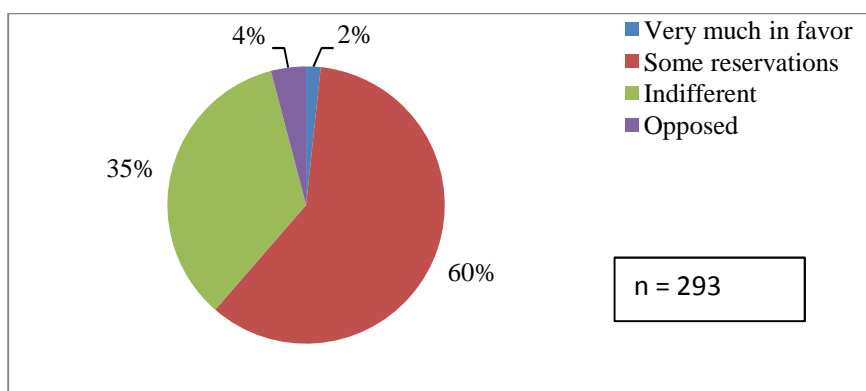
Respondents characterized their own level of knowledge pertaining to veterinary care for organic livestock and estimated their colleagues' knowledge levels (Figure 14). The majority of survey participants (51%) acknowledged little knowledge of health treatment options for organic livestock for both themselves and their colleagues, although overall they tended to rate their own knowledge slightly higher.

Figure 14. Levels of veterinary knowledge about organic livestock reported for self and others



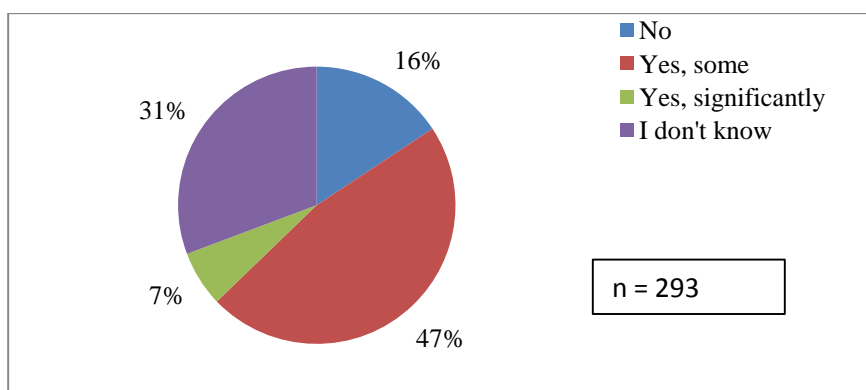
When asked how most veterinarians view organic livestock production, the majority of respondents (59.7%) indicated that most veterinarians have some reservations (Figure 15). A few respondents (1.7%) indicated full endorsement, and a few more (4.1%), total opposition to organic livestock production.

Figure 15. How vets estimate colleagues' views of organic production



Interestingly, over half the veterinarians (53.6%) believed the profitability of organic farms would increase with improved veterinary understanding of organic systems (Figure 16). This contrasts sharply with farmer estimations of the same topic, where 86% of farmers indicated they did not think their profitability was limited by lack of veterinary knowledge.

Figure 16. Impact of improved veterinarian organic treatment knowledge on farm profitability



The veterinarians were asked to indicate level of agreement with a series of seven statements regarding organic agriculture in general. Table 9 displays mean responses on a scale of 1 – 5 (where 1 indicates the highest level of agreement and 5 indicates the lowest level of agreement). Over all, veterinarians overwhelmingly recognized that organic products meet a consumer demand (85.9%), and only 27.7% agree that organic agriculture is not a viable production system, and 33.5% stated that organic farmers avoid modern technology. However, 42.3% believed organic agriculture will translate to fewer profits for veterinarians, and 54.5% would prefer to receive a call from a non-organic farmer.

Table 9. Extent of agreement with seven statements about organic agriculture

Statements regarding organic agriculture (n = 295)	Mean response (1-5)
Organic agriculture is better for the environment.	3.0
Organic agriculture is economically a good idea for farmers.	3.3
Organic agriculture means fewer profits for veterinarians.	2.7
Organic agriculture is not a viable production system.	3.2
Organic farmers avoid the use of modern technology.	3.3
Organic agriculture meets a consumer demand.	1.9
I prefer a call from a non organic farmer than an organic farmer.	2.5
1=Highest level of agreement; 5=Lowest level of agreement	

When asked for specific ways in which organic agriculture can be improved, 45 veterinarians offered comments. The most frequent themes are outlined below, in order of decreasing frequency. Each thematic category contains at least one representative quotation.

***Accessibility of training and information*** (12 comments)

I do not have enough knowledge about organic agriculture to offer any ideas about how it can be improved. Perhaps educating veterinarians would be a good start.

Several veterinarians commented that information is scarce and expressed desire for formal training. Specific training options suggested were seminars and conferences. One

veterinarian suggested introducing veterinarians to organic farmers after having acquainted veterinarians with knowledge that would equip them to better serve those farmers. Another stated:

I have had limited exposure to organic farming. The organic farms that I have been exposed to in the past have been very ORGANIC, meaning the organic matter (feces) was poorly managed. I felt the overall hygiene on these farms was very poor. Thus my limited impression of organic agriculture is poorly managed farms. I would be interested in learning more about the industry from people who are doing things right. Perhaps farm tours in conjunction with conference priority providing continuing education credits. I feel it is viable if done properly.

Another vet said, “Veterinarians in general need more reliable, science-based info about organic production. As indicated, I and probably all of my colleagues would attend CE under any conditions to get more good info.”

***The Need for Improved Farm Management*** (10 comments)

Improved management was mentioned by nine veterinarians. “Better management practices – clean, dry, good ventilation. Avoid overcrowding of facilities,” reads one comment. Another said, “These farms could benefit from good preventive management practices. Good hygiene, cow comfort, etc.”

***The Need for Changes in Regulations*** (8 comments)

Concerns about herd health as it relates to organic guidelines and organic-approved products were elicited from nine veterinarians in response to the question of how organic agriculture could be improved. While animal husbandry is espoused as an essential part of organic animal agriculture, some vets suggested that organic producers do not always live up to this goal. The comments seemed to stem from concerns that too-stringent organic guidelines create a disincentive to treat sick animals, leading to decreased animal welfare since those treated with prohibited substances lose their organic status. One comment reads:



Animal welfare issues abound in organic farms. I'm not sure how the consumer would feel if they knew how some diseases are treated and not treated, and the suffering of the animals without proper intervention or antibiotics. There needs to be something in place that helps the animal immediately when illness happens.

Though national standards require producers to treat sick animals, with conventional treatments if necessary, some vets indicate this rule is not always followed. “The honor system fails with too many,” said one veterinarian. Although organically-labeled products are subject to inspection and required to keep detailed records, it seems likely that the rules at times get broken. Three comments in this section related specifically to parasite control. One said, “My biggest concern is with internal and external parasites. I’m not sure if they can be effectively controlled under organic guidelines.”

***The “Need” for “Absolute Guidelines”*** (6 comments)

Some veterinarians are unclear as to how organic is defined, and may not realize that uniform national standards do exist. “There MUST be specific standards,” said one veterinarian. Another asked, “How organic is organic? Producers seem to be as organic as the market wants at a given time. Who besides the producer will verify how organic a product is?” And another: “Organic associations need to establish uniform rules of acceptable uses of non-organic material.” Clearly, some veterinarians are not getting the message that uniform standards do exist.

The matter may be further complicated by individual inspection agencies having different standards than those of the USDA. During the “open comments” section of the survey, one respondent wrote, “I find it a little frustrating working with organic producers. We have clients who are certified by different organizations that allow/disallow certain drugs, so what is ‘organic’ for one client may not be for another.” Another commented, “We

don't have a good, consistent source of information . . . Different organic organizations have different lists of approved products.” Indeed, individual certifiers are allowed to enforce standards that go above and beyond NOP regulations. This can be seen as positive since some people advocate for standards that are stricter than those of the USDA. However, this clearly complicates the job of veterinarians attempting to work within organic systems and possibly communicates a confusing message to consumers as well. This relates to the next concern elicited.

***Misleading and/or confusing labeling and marketing*** (4 comments)

“Regarding organic labeling, few people know how it is defined, monitored, or insured,” said one respondent. The other three of the four comments expressed concern that consumers are led to believe that organic food is better for animals and the environment, and/or that it is healthier than conventionally produced foods – claims with which those commenters disagree. Participants elaborated on this further in the open comments section at the end of the survey. One said:

The perceived need for these products is based on a false reality that can only exist in a “fat” society. And what do I mean by a fat society? This is a society that has too much time. This extra time tends to be used on activities and ideals that are heavy on emotion and light on fact or science.

Another said, “Organic agriculture perpetuates the myth that it is healthier for the consumer. In my experience I have seen more disease and pathology inherent in organic production. I wouldn't put organic beef or pork in my freezer.” And another: “Organic products need to promote their ‘benefit’ without denigrating normal production. More often than not they say something is wrong with current production practices. This implies that I am not doing my job.” And finally:

Organic farms also tend to cheat on what they can and can't do. There is no good enforcement system in place. It's unfortunate that people equate organic with better because what I see is more disease, poorer performance, and worse animal welfare on organic farms. When I think organic I think high bacteria counts in milk, increased parasitism and overall ill thrift.

While some of these comments seem biased against organic agriculture from the start, other veterinarians are critical, yet willing to give it a try. The following remarks came as a part of the open comments.

I certainly believe everyone has the right to grow or produce food, milk, meat in whatever way they feel is best for them. My problem with "organic" production is that it always is marketed with the implication that if the milk does not come from an organic dairy it is "full of pus and hormones" and if meat is not organic it is "the same as putting antibiotics in our childrens breakfast food." Both of these statements are totally false, but to those not familiar with agriculture, the New York housewife, these statements, which were on Yahoo News, seem very scary. If you can only sell your product by negative advertising and not on its merit it's not much of a product. The economy of production in an ever increasing world is another whole topic. Experiments to be done: Two identical products -- milk, meat, etc. (one organic and one conventional). Need 1) Blind taste test, 2) complete evaluation of chemicals etc. in each product, 3) cost of production for each. Would be interesting comparative study!! Hope someone has the \$\$ to do it someday.

#### ***Production Inefficiency*** (4 comments)

Four respondents suggested that production on organic farms simply does not keep up, and that it is not a viable option to "feed a growing world." Another referred to efficiencies related to economies of scale, referring to his cattle feedlot as an example and citing efficiency in transport in terms of dollars saved and fossil fuel expended. One said, "Organic is a luxury for Americans that Africans cannot afford." Another claimed, "It takes valuable resources away from all of agriculture." Other responses (2) to this question related to the perceived lack of sustainability within organic agriculture. Along these lines, one of the open comments was, "Organic is an interesting dilemma for me. It seems to require more

soil tillage and more fuel to produce a given quantity of food/fabric compared to non-organic. Is it sustainable?”

Two veterinarians also discussed the need for increased veterinary involvement in organic systems. One said, “In our area organic producers are very small and there are very few of them that have requested our services. We, as veterinarians, do have advice we can offer such as vaccination programs and production tips.”

One comment in this section discussed the lack of research behind many organic-approved veterinary treatments. One vet, in response to a difference question, said, “We need to be able to access scientifically researched treatment plans rather than deal with every fu-fu-dust salesman traveling up and down the road.” Three of the open comments at the end of the questionnaire discussed lack of treatment options. In reference to existing organic-approved products, one comment reads:

I tried to order some products from Crystal Creek and was told they wouldn't sell to us because they already had a dealer in our territory. This is ridiculous! I can't imagine a vet distributor refusing to sell me draxxin, for example, because the other vet in town already bought some first.

Clearly there is a shortage of available, effective, tested products that meet organic requirements.

With regard to the availability of information related to organic livestock, most veterinarians (92%) said information is unavailable (30.8%) or difficult to access (61.2%); only 8% said adequate information is available. Only 1.4% claimed to have received education related to organic livestock production as students, and 88.1% said they had not. Of course, the majority of veterinarians surveyed in this study graduated before the USDA put organic rules as we know them today into effect in 2002. Over a third of veterinarians

(38.8%) said veterinary medicine programs should provide more coverage of the topic, but a larger percentage (46.6%) were undecided. A smaller number (14.3%) said veterinary medicine programs should not provide more coverage either because adequate information is already provided (4.4%) or it is not the place of these programs to provide the information (9.9%).

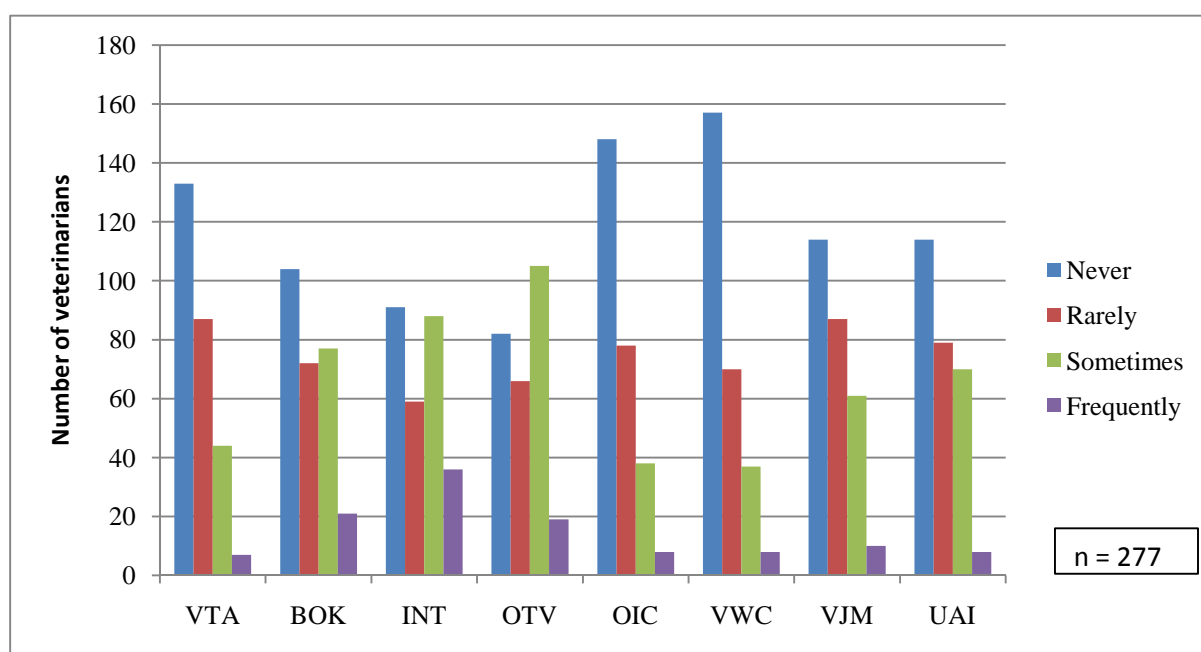
Few veterinarians (4.8%) are members of organizations providing education related to organic livestock production, and even fewer (3.5%) have ever attended workshops or field days pertaining to the topic. Only 18.8% are even aware that such events occur. Out of the small number of veterinarians who had attended these events (9 people), the degree to which participants were satisfied with the training provided at events attended is as follows: 33.3% are highly satisfied; 50.5% are somewhat satisfied; and 16.7% are somewhat unsatisfied. No veterinarians claimed to be highly unsatisfied with the information.

Veterinarians have membership in a variety of farming and veterinary organizations that provide education related to organic production. Other than the Iowa Veterinary Medical Association (to which all respondents belong), the most common organizations in which respondents specifically claimed membership were the Farm Bureau (one explained the Farm Bureau's newspaper, *The Spokesman*, announces upcoming educational events in the area) (3) Practical Farmers of Iowa (3), and American Association of Bovine Practitioners (AABP) (3). The AABP was cited here among other places as having a useful listserv where information can be obtained. Other memberships were listed as follows: American Holistic Veterinary Medical Association (2 memberships), and one membership for each of the following: International Veterinary Acupuncture Society, American Association of Swine Veterinarians (1), American Veterinary Medical Association, Northwest Iowa Honey

Producers, Iowa Cattlemen's Association, and Niman Ranch. Although mentioned, Niman Ranch does not deal specifically with organic products, but rather with natural, antibiotic free meat. Throughout the survey, however, Niman Ranch was cited as a source of organic information six times. If veterinarians consult Niman Ranch for alternative treatment ideas in general, that does not necessarily indicate a problem, but if they believe Niman Ranch and USDA certified organic are equivalent, then this represents a gap in understanding that should be addressed.

Veterinarians claim a variety of other sources of information related to organic livestock. Out those who reported specific information sources, the largest number claimed to use the internet, followed by books and other veterinarians (Figure 17).

Figure 17. Sources of Information on treatment of organic livestock



\*\* VTA=Vet Association; BOK=Books; INT=Internet; OTV=Other vets; OIC=Organic inspection, certification and education; VWC=Vet workshops and continuing education; VJM=Vet journals and magazines; UAI=University and other academic/research institutions

Mean responses can be shown on a scale of 1 to 4, with 1 indicating “never” and 4 indicating “frequently.” Mean responses are: internet, 2.24; other veterinarians 2.21; books, 2.04; the University and other academic/research institutions, 1.89; veterinary journals and magazines, 1.87; veterinary associations, organic inspection, certification, and education agencies 1.71; and veterinary workshops and continuing education, 1.61. The most common sources referred to specifically within each category are as follows, and the number of times mentioned is indicated in parentheses:

***Veterinary Associations:*** Iowa Veterinary Medical Association (35), American Association of Bovine Practitioners (15), American Veterinary Association (13), and American Association of Swine Veterinarians (10).

***Books:*** *Treating Dairy Cows Naturally* by Hubert Karreman (5), *Large Animal Internal Medicine* (5), *Merck Manual* (4), *Alternative Treatments for Ruminant Animals* by Paul Dettloff (2), and standard text books (2).

***Veterinarians:*** Many respondents mentioned discussions with friends or colleagues within their practice, but 18 specific names were offered: Hubert Karremen (3 times), Kurt Van Hulzen (2 times), and one mention for each of the following: Merle Kuennen, Dupree, Dettloff, Schaefer, Janet Sears, Ron Anders, Gary Van Englenburg, Alex Ramirez, Dave Striegel, Tony Stinman, Goelz, Joe Snyder, Jim Illy, Travis Hargins, Huddle Kiechler (spelling was unclear), Dave Schalpkohl, and Art Behrens. Four respondents said they consulted Iowa State University, two of them referring to Extension.

***Inspection Agencies:*** Four referred to Organic Valley, even though it is not an inspection agency, and two referred to the Iowa Department of Agriculture and Land Stewardship. Two referred to the USDA.

**Veterinary Workshops:** IVMA (8), programs at ISU (5), CVC (4).

**Veterinary Journals and Magazines:** Journal of the American Veterinary Medical Association (21), DVM Magazine (7) and Beef Magazine (2).

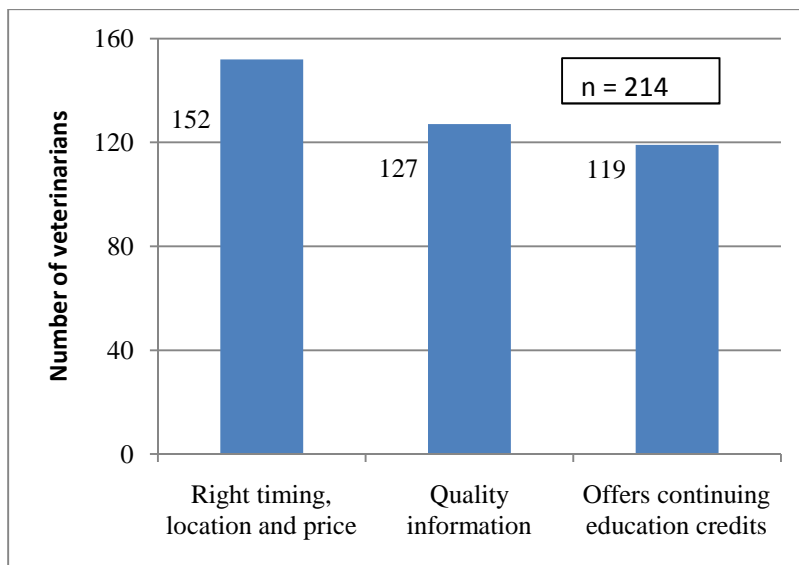
**Universities and Research Institutions:** ISU (40), Kansas State University (4)

**Web sites:** American Association of Bovine Practitioners list serve (9), Veterinary Information Network (7), and general search of various sites (13).

**Other Sources:** The farmer (8)

The majority of veterinarians (72.2%) said they would attend an educational event related to organic agriculture. Just over a quarter (27.8%) said they would not. Figure 18 shows the necessary conditions for attendance by those interested in such events.

Figure 18. Conditions for attendance at educational events



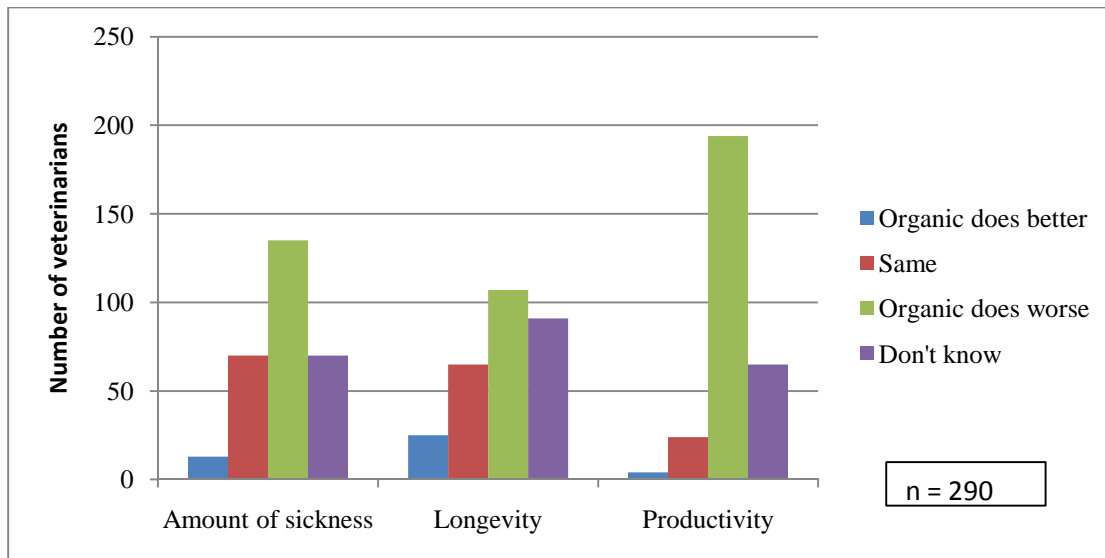
Those who said they would not attend such events gave three reasons: a belief they could get the information elsewhere (15), skepticism about the quality of information they would receive there (5), or lack of interest (65). Several of those “not interested” added in the



survey margins that they simply do not have the demand for organic knowledge and services within their practice. One added, “Would be interested in information if demand existed.”

In general, veterinarians characterized herd health as better on non-organic farms in terms of amount of sickness, longevity, and productivity, as depicted in Figure 19. Research done in the United States (Lund & Algers, 2003) and Europe (Hovi et al., 2003) indicates similar levels of health on organic and non-organic farms, except with regard to parasites, which are seen as especially threatening to organic production.

Figure 19. Veterinarian view of herd health: organic and non-organic



As shown in Table 10, the perspectives of veterinarians who work on organic farms (46% of those surveyed) vary from the perspectives of those who do not. The cross tabulation shown here indicates that, in general, those who work on organic farms tend to have more favorable perceptions of organic herd health compared to average perceptions.

Table 10. Cross tabulation of veterinarian herd health perspectives and experience working on organic farms

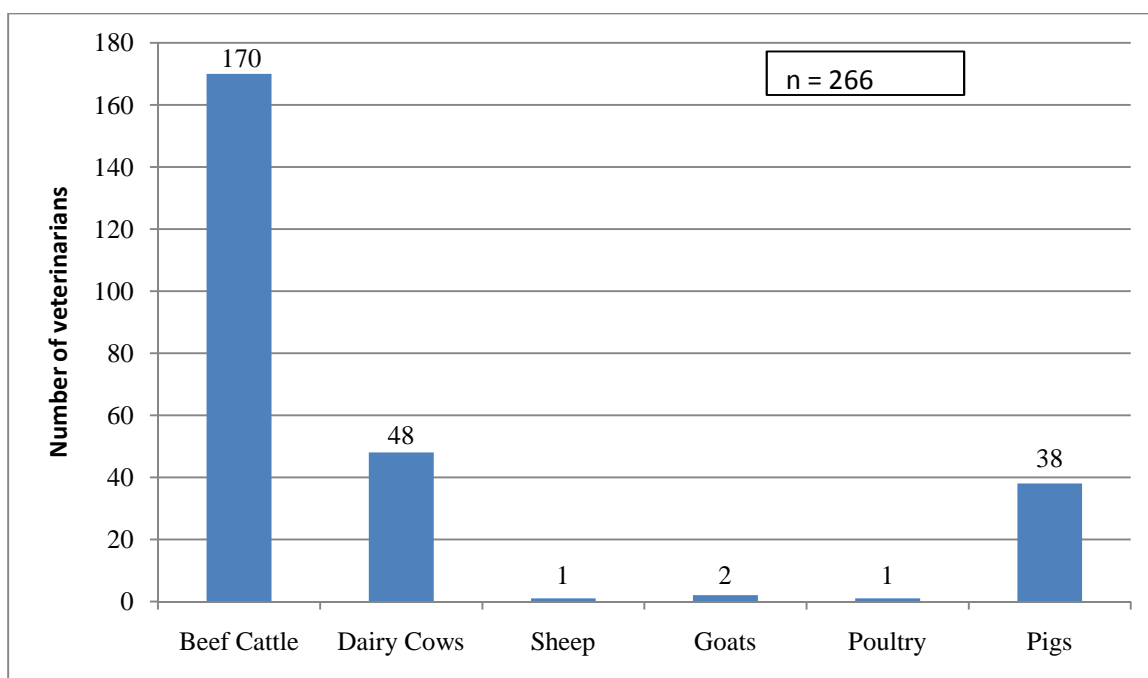
Experience Working on Organic Farms			
	Work with Organic Producers?		
	No	Yes	Total
<b>Amount of Sickness</b>			
Organic does better	2.6	6.8	4.6
About the same	17.0	31.8	23.9
Organic does worse	50.3	43.9	47.4
Don't Know	30.1	17.4	24.2
	100.0	100.0	100.0
Total	153	132	285
<b>Longevity</b>			
Organic does better	6.6	11.2	8.7
About the same	16.4	29.1	22.4
Organic does worse	38.8	35.1	37.1
Don't Know	38.2	24.6	31.8
	100.0	100.0	100.0
Total	152	134	286
<b>Productivity</b>			
Organic does better	1.3	1.5	1.4
About the same	9.2	7.6	8.5
Organic does worse	59.9	77.3	68.0
Don't Know	29.6	13.6	22.2
	100.0	100.0	100.0
Total	152	132	284

Most veterinarians (80.1%) believe their profession ought to have a role in the development of organic agriculture. Of those who offered comments regarding specific ways, many (38) referred to traditional on-farm services such as preventive management, health advice, vaccination protocols, and biosecurity. Others referred to development at a policy level, inspection and monitoring, and testing of alternative treatment products (3). Twenty-eight additional comments were too vague (“information source” and “as consultants,” for example) to characterize as either on-farm or policy-related, but could apply to either category.

## ***Section II. About Your Practice***

The largest percentage of veterinarians (65%) claimed to most commonly provide care for beef cattle, as show in Figure 20, whereas the majority of organic livestock producers (52.1%) claimed dairy cows as their primary source of livestock income, followed by poultry (19.2%) and beef (15.1%).

Figure 20. Most common type of livestock treated

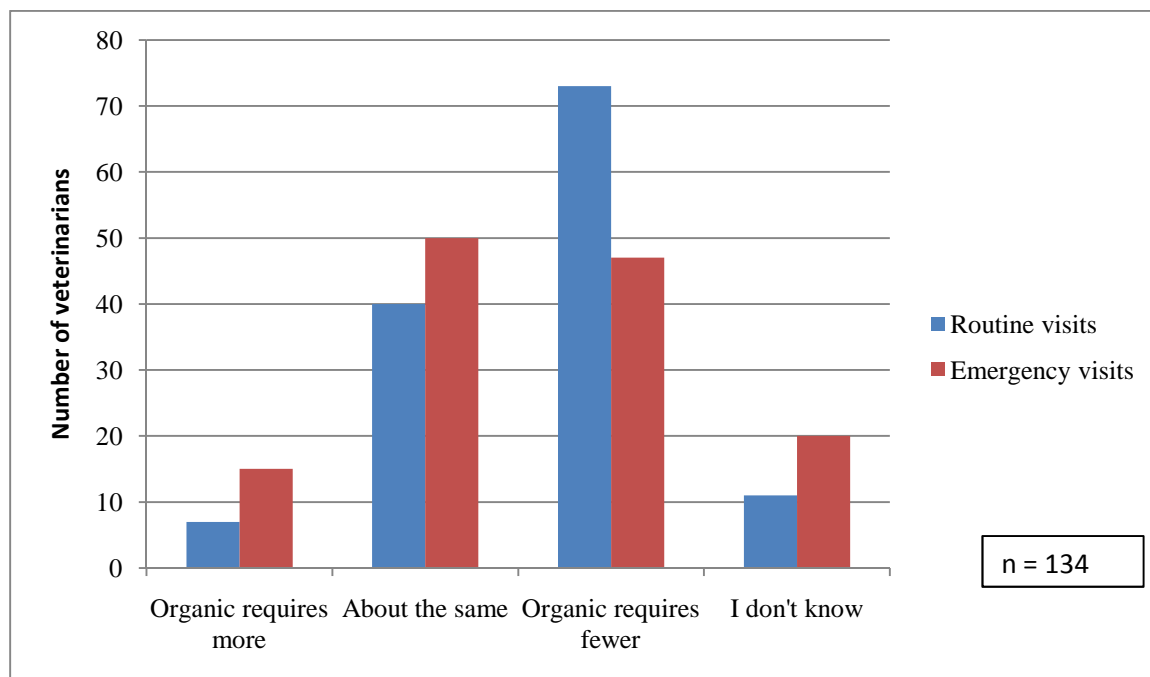


Only 7.9% of veterinarians claimed saw a growth in demand for services to organic farms, with the majority (53.6%) saying demand had been consistent in recent years. During that time, 17.6% reported a decrease in demand for the same types of services. Only 2.7% said they formally market their services to organic producers. Eighty-five percent make no attempt to market themselves in this way, and 11.7% say that, although they do make a formal attempt in this regard, producers come to learn through word of mouth that they

provide services to organic livestock. Just under half (47%) are actively working with at least one organic system, and 53% are not currently working with any.

Among all veterinarians who currently work with organic producers, fewer routine and emergency visits were required at the organic farms they served compared with the non-organic (summarized in Figure 21). The data obtained here are problematic because they did not allow an animal-to-animal comparison between organic and non-organic farms. Two veterinarians commented in the survey margins that organic farms required fewer calls because they have fewer animals, and not necessarily because on-farm health was better in those systems. Three veterinarians indicated that the phrasing of the questions could lead to misleading results in a different way: The questions are phrased, “Do the organic farms you deal with typically require more or fewer routine visits?” and “Do the organic farms you deal with typically require more or fewer emergency visits?” The comments indicated that organic producers make fewer calls to veterinarians not because there is less of a requirement in terms of bodily ailment, but because organic producers are less likely to ask for veterinary advice for these problems compared to conventional producers. In keeping with this theme, 10 respondents indicated in their written comments that organic producers were overly reluctant to consult help from veterinary professionals. One commented, “Few of my organic clients call for routine prevention. They call with disasters.”

Figure 21. Vet calls from organic producers compared with non-organic producers



When asked for general comments at the end of the survey, the veterinarians' comments revolved around the following themes: lack of standards or knowledge of standards (14), organic farmers' lack of willingness to rely on veterinary help (10), the myth and emotion behind organic product marketing (9), need for efficient production in a growing world (7), inhumane treatment on organic farms (7), no demand from organic producers within their practice (6), outdated, non-technological methods in organic livestock production (3) and lack of scientific testing behind organic-approved treatment options (3).

## **CHAPTER 4: Discussion and Conclusions**

After the data from both surveys were collected and analyzed, several themes emerged that are pertinent to understanding this topic. Three major findings will be elaborated upon in this chapter. First, organic producers in Iowa, by and large, are satisfied with the availability of veterinary services available to them. They express desire to handle most routine health treatment without consulting outside help and report lack of herd health challenges as the primary reason for this preference. Second, and in contrast to producer perceptions, veterinarians indicate widespread health challenges on organic farms and stress the need for veterinary involvement in these systems. And third, veterinarians express confusion about how best to serve organic producers and where to acquire reliable information in their pursuits. This combination of results points to what Martha Rideout (2010) referred to as “gaps in perception, gaps in knowledge, and gaps in communication” among players in organic livestock systems.

As indicated, the producers surveyed handled most routine herd health needs on their own. The biggest reason cited for this self-reliance was lack of herd health problems. This may be the reason that veterinary care does not pose a significant challenge to their operations, nor interfere with their ability to be profitable. However, the veterinarians surveyed indicated weaknesses in management and herd health care protocol in organic systems and noted that producers should consult veterinary care more frequently than they do. Several expressed concerns regarding animal welfare based on that. Most said veterinary professionals should be active in the development of organic agriculture through traditional on-farm involvement, stressing preventive management. Several said

veterinarians should be involved in inspection and oversight, or in the development of organic standards. Veterinarians were originally consulted during the rule-making process from 1990 to 2001 (K. Delate, personal communication, 2010), but no veterinarians surveyed indicated participation in that process. The potential role of veterinarians in this regard is discussed in Chapter 5 of this report.

While most veterinarians expressed some reservations about organic production, the majority did indicate some level of interest. Most believe information is difficult to access and favor continuing education options. While some conferences and workshops do exist, they are few and far between, and many interested veterinarians do not know about them. The next chapter describes the current challenges associated with continuing education credits that are recognized by RACE (Registry of Approved Continuing Education). A smaller but still significant subset of veterinarians favor implementing organic agriculture education into veterinary medicine programs, and several expressed the need for formal research with regard to alternative treatment options.

The open-ended comments showed a high degree of veterinarian misunderstanding regarding the definition and rules of organic production, existence of national standards, and information access. The USDA offers a detailed listing of rules governing organic livestock production on the NOP Web site in downloadable format, and has supported dissemination of information on organic livestock. For example, the National Center for Appropriate Technology (2004) received funding from the USDA-NOP as well as the USDA Sustainable Agriculture Research and Education program, to write the *Organic Livestock Workbook*, which is designed to provide greater understanding of organic standards. Directed mainly toward producers, it covers general organic production practices, along with guiding

questions to ensure organic integrity. The information is not in-depth but provides numbers of federal codes that provide more explicit details regarding allowed and disallowed substances. It also lists other resources such as Web sites, Extension offices and other contacts, and related publications. The problem seems to be that veterinarians do not know about these information sources. Perhaps fact sheets and links to more detailed information could be provided by the USDA and Extension to state veterinary associations, to relay that information on to their membership. Or, veterinary associations could take the initiative of compiling information for their members.

Other organizations seek to aid in the transmittal of information from the NOP to producers and others involved in the agricultural system. For example, the Organic Materials Review Institute (OMRI) provides an independent review of products “intended for use in certified organic production, handling, and processing” (Organic Materials Review Institute 2010). The OMRI Web site also provides information on NOP guidelines to certifiers and others who subscribe to their services. The services of OMI are open to all, but information about those services, as well as those of other outreach providers, should be made available to veterinarians through the same channels described above.

Outside of information transmittal involving the USDA and veterinary medical associations, it also seems logical to rely on existing information networks for knowledge transfer. Since a number of veterinarians referred to the AABP list serve and the Veterinary Information Network (VIN) as sources they already consult, these Web sites would serve as good conduits for a variety of information related to organic standards, treatment options, and ways veterinarians can be involved with organic livestock and be active in the development and direction of those systems. Other information could include updates on



conference and workshop locations, links to pertinent Web sources, and fact sheets addressing basic concepts and common misperceptions related to organic agriculture.

## **CHAPTER 5: Future Research and Direction**

Many challenges were brought to light by the responses and comments of the producers and veterinarians who took part in this survey project, challenges that are best addressed through the collaboration of all parties involved. One of these challenges pertains to continuing veterinary medical education (CE). According to Jennifer Burton, a veterinarian from Illinois, new standards were enacted in September of 2009 that hinder the process of approval for CE related to organic treatment options (Personal communication, 2010). The new (Registry of Approved Continuing Education) RACE standards document states that only those CE programs that reflect “that body of knowledge and skills accepted by the profession as within basic veterinary sciences” are subject to approval and these programs should “build upon or refresh the participant in the standards for practice and the foundational, evidence-based material presented in accredited colleges or schools of veterinary medicine or veterinary technician programs.” In other words, if the material wasn’t covered in traditional veterinary medicine programs, credit is not likely to be granted for continuing education related to those topics. This seems to heighten the need for discussion of organic livestock health care in traditional programs. The RACE statement continues: “CE programs that advocate unscientific modalities of diagnosis or therapy are not eligible for RACE approval,” which makes the need for scientific research of organic-approved treatments all the more imperative.

To summarize, most veterinarians surveyed would attend CE related to organic livestock care, but in order for CE to be legitimized on a large scale by new RACE standards, two things would have to happen first: 1) increased information on organic livestock and treatment options would need to be presented in veterinary medicine and veterinary

technician programs, and 2) increased scientific research and testing related to safety and effectiveness of alternative treatment products and modalities would need to occur. Of course, workshops and conference do not need to be approved by RACE; useful information can still be transferred at non-approved meetings, but these meetings should be better publicized and could be more frequent in number in order to meet the needs of veterinarians interested in obtaining information from them.

Informed veterinarians could be an invaluable resource on the National Organic Standards Board (NOSB), and several expressed interest in the responsibilities associated with that board. The group is appointed by the Secretary of Agriculture, as authorized by the Organic Foods Production Act of 1990. Members currently serve 5-year terms, although the first members served staggered terms of 3, 4, or 5 years.

Currently, this fifteen-person panel does not include a veterinary professional. It is comprised of “four farmers/growers, two handlers/processors, one retailer, one scientist, three consumer/public interest advocates, three environmentalists, and one USDA accredited certifying agent who sit on various committees” (NOP 2010). The livestock committee is made up of eight individuals, including:

- Dr. Wendy Fulwider an animal husbandry specialist with Organic Valley/Organic Prairie. Dr. Fulwider has a PhD in Animal Behavior, an M.S. in Dairy Science, and a B.S. in zoology.
- Kevin Englebert, an organic dairy producer from New York with a background in Economics.
- Dan Giacomini, a dairy nutrition consultant who grew up on a dairy farm and has an M.S. in Dairy Science.
- Jeff Moyer, a producer of field and horticultural crops who also conducts research at the Rodale Institute.

- Jennifer Hall, a specialist in consumer public interest who is also an organic inspector and works on sustainable food for commercial cuisine.
- Tina Ellor, an environmentalist and mycologist.
- Joe Dickson, a retailer with Whole Foods.
- Annette Riherd, an organic producer of fruits and nursery plants.

Dr. Hubert Karremen, who several veterinarians and farmers referred to in this survey project because of his expertise related to veterinary care for organic livestock, was active on the NOSB board at one time, providing an example of a practicing veterinarian within that role. Anyone can apply or be nominated for a position on the board, but members are ultimately selected by the Secretary of Agriculture. Criteria include understanding of organic principles and practical experience in the organic community; experience in developing public policy; willingness to participate in standards development and educational outreach activities; commitment to integrity and growth of organic; and ability to evaluate technical information and participate in recommendations (NOP 2010). It would be good to make possibilities related to service available to veterinarians, especially those who are already involved with organic producers and supportive of organic ideals and practices.

In order to allow a collaborative discussion of topics addressed and raised in this study, the Leopold Center for Sustainable Agriculture has provided additional funding to address various issues in multiple venues, including a panel discussion at the 2010 Iowa Organic Conference at Iowa State University on November 21, 2010. Two notable participants will be Drs. Wendy Fulwider and James K. West. As earlier noted, Dr. Fulwider is an animal scientist and animal behavior specialist working with Organic Valley/Organic Prairie and a member of the National Organic Standards Board. Dr. West is the director of Food Supply

Veterinary Medicine at Iowa State University College of Veterinary Medicine and a leader in the Iowa Veterinary Medical Association. Further feedback from veterinarians, producers, educators, students, and others involved with agricultural outreach will be collected with regard to improvements in communication and education at this panel discussion. Building upon the research reported in this thesis, the following issues will need to be addressed:

- How are educators and veterinary professionals to interpret the large discrepancy between producer and veterinary perceptions regarding organic livestock health and the need for improved veterinary support? Specifically, how can they decide to allocate resources to veterinarian improvement in an area where most producers appear to already be satisfied?
- What are the perceptions of organic agriculture from students entering and enrolled in the College of Veterinary Medicine? What trends do they see, and what learning do they value?
- How can existing conferences and workshops be improved and/or expanded to meet the needs of the many veterinarians who are interested in the information but have not made use of those resources up to this point? What is the role of Extension and other University personnel with regard to organic agriculture and organic herd management? How can they best be equipped and utilized? What other options exist for the transmittal of information? Are mentoring partnerships being utilized in Iowa? If not, how can this be facilitated?
- What is the best way to dispel misinformation regarding organic management? What steps must producers make to make to gain the respect of veterinarians and others who are skeptical about livestock treatment on organic farms?
- What about the lack of scientific research behind many organic products and treatment options? How can these products be evaluated and guaranteed as safe? What are the legal issues involved with recommending treatments outside of the traditional standard of care for an ailment?
- How might the NOSB benefit from having a veterinarian on the board? How might veterinarians be prepared for the job? What are the challenges that accompany this consideration?

- How can animal welfare issues should be addressed by the NOP, organic producers, and veterinarians, together? How can relationships and communication between these groups be improved for the sake of animal health, producer success, and the integrity of the organic label?

The goals of the Leopold project will continue beyond the panel discussion. Efforts will be directed toward recommendations for improvements in communication and education based on the two surveys.

### **Future Research Directions Beyond this Project**

Additional research needs to be done related to the topic of organic livestock care. In Iowa, producer and veterinarian perceptions should be monitored as the future unfolds and the demand for organic products changes with consumer values. If certain avenues for organic livestock education are ruled out in the present, that should not preclude their use as a means of information transmittal in the future. Because the face of organic agriculture has shifted so rapidly in recent years, a careful finger should be kept on the pulse of its development. This is true not only in Iowa, but also in the rest of the Midwest and other places where animal agriculture plays a vital social, economic, and ecological role.

Also, this research points to a clear need for peer reviewed research on herd health treatment products. Until treatment options are legitimized by the rigors of science, any attempt to disseminate information regarding those methods will be stifled by the doubts of those who control legal policy, education, and on-farm management. This begs the question of research funding and of who will bear the economic burden of research in the field of organic treatment options. In the meantime, methods of improved management should be encouraged and enacted in order to minimize the occurrence of the most frequent health challenges in livestock systems.

The results of this project point to several other areas of research interest. Interestingly, 23 of the 75 producer surveys were returned from mailing addresses near Kalona, Iowa, which is known to be a largely Amish community. Further research could be undertaken to parse the differences in survey responses given by Kalona residents and the general population. If Kalona residents experience fewer herd health problems and more confidence in dealing with the challenges of organic livestock production, where does this difference come from? Does it relate to the tight-knit structure of the Amish community? Do specific elements of social and human capital within that community allow greater understanding and improved herd management? The same questions can be asked with regard to members of other cooperative communities such as Practical Farmers of Iowa. Interview research could be conducted to obtain thorough answers to these questions and to explore ways that strengths within those communities could be applied in other places.

Interviews could also be useful in understanding curriculum structure within university programs of veterinary medicine. This could allow a great understanding of what concepts are and are not being taught, as well as the history and rationale underlying those curriculum policies. Do university faculty share the sentiments of the practicing veterinarians surveyed in this project? To what extent is the level of acceptance of organic agriculture shifting within that milieu? Students' perspectives should also be taken into account in order to learn what trends future veterinarians are aware of and what directions they foresee and value.

Although organic agriculture in the general sense may indeed be the oldest agriculture in the history of the world, research to support its development is still in its infancy. Significant expenditures of time and money currently go towards research regarding the

environmental and personal health effects of horticultural and agronomic crops under organic management, and this is a step in the right direction. But given the integral nature of livestock within sustainable agriculture systems, significant focus must also be dedicated to organic animal production, and this has to include an emphasis on herd health and well-being. And, of equal importance, communication, cooperation, and education must be fostered between each player within those systems so that no knowledge is lost and left unused.



**APPENDIX: Survey Tools**

April 15, 2010

Title/name

Address

City, State

Dear \_\_\_\_\_

As a producer of organic livestock in Iowa, you are well aware of the challenges specific to organic farming. The Leopold Center for Sustainable Agriculture is sponsoring a survey to learn more about the quality and availability of veterinary care for organic farming systems. You and other organic livestock producers in Iowa are being asked about your experience, knowledge and opinions. Your answers will inform efforts of farming organizations, Iowa State University, ISU Extension, and others in the position to offer education and outreach to veterinarians and farmers.

Your name was obtained from a list provided by the USDA Agricultural Marketing Services office. In order to make sure that the results of this survey truly reflect the realities of organic livestock production, it is important that each questionnaire is completed and returned in the enclosed envelope. However, it is important to note that your participation is strictly voluntary, and you may skip any question you prefer not to answer.

The results of the questionnaire will be kept completely confidential. The identification number on the envelope will be used for mailing purposes only; it will allow us to check your name off the list when the survey is returned to us. Your name will never be placed on the survey itself, and the information you provide will not be disclosed to anyone.

If you have any questions regarding this questionnaire I would be happy to answer them. Feel free to contact me by email ([joneill@iastate.edu](mailto:joneill@iastate.edu)) or telephone (515-294-3763). You may also contact Betty Wells, Extension Sociologist, who is working with me on survey implementation ([bwells@iastate.edu](mailto:bwells@iastate.edu)).

Thank you very much for your time.

Sincerely,

Jenny O'Neill  
Graduate Student in Sustainable Agriculture  
Iowa State University  
515.294.3763

# **Veterinary Care for Organic Livestock: An Assessment of Farmer Experiences and Needs**



**April 2010**

Cooperators: Leopold Center for Sustainable Agriculture, Graduate Program in Sustainable Agriculture, Departments of Sociology and Agronomy, ISU Extension, and Colleges of Agriculture and Life Sciences and Veterinary Medicine.

**IOWA STATE UNIVERSITY**  
University Extension



## Section I. About Your Farm

**A. Are you currently producing at least one type of USDA certified organic livestock?**  
(Circle the number of your answer.)

Yes .....1

No.....2

➔ If no, do not complete the rest of the survey, but please return it in the enclosed envelope.

**B. How many head do you produce in a typical recent year for each type listed below?**  
(Please write in any "other" species not listed and the number of head for each.)

**Number  
of Head**

_____	Beef cows
_____	Dairy cows
_____	Poultry
_____	Sheep
_____	Goats
_____	Pigs
_____	Other (specify):
_____	Other (specify):
_____	Other (specify):

**C. Which one type of organic livestock generates the most revenue on your farm?** \_\_\_\_\_

**D. How long have your livestock been certified organic?** \_\_\_\_\_ years

**E. How long has your farm operated according to organic principles?** \_\_\_\_\_ years

**F. What is/are the most common health challenge(s) experienced with your livestock?**  
(Please write a brief description in the space below, and be sure to specify which type of animal is affected by each health challenge you note.)

**G. How many dollars in organic livestock products sales did your farm have in 2009?**  
*(Circle your answer.)*

Under \$10,000 .....	1	\$80,001 to \$120,000 .....	5
\$10,001 to \$20,000 .....	2	\$120,001 to \$160,000 .....	6
\$20,001 to \$40,000 .....	3	\$160,001 to \$300,000 .....	7
\$40,001 to \$80,000 .....	4	Over \$300,000 .....	8

**H. Are you employed full-time or part-time at your farm for the majority of the year?**

Full-time.....	1
Part-time.....	2

**I. How many people in addition to you . . .**

. . . . are employed full-time at your farm? \_\_\_\_\_

. . . . are employed part-time at your farm? \_\_\_\_\_

. . . . provide hands-on care for your livestock? \_\_\_\_\_

**J. Have you experienced a growth in demand for your organic livestock products in the last 10 years (or since you have been certified if less than 10 years)?**

Yes, there has been a notable increase in demand .....	1
No, demand has been fairly consistent .....	2
No, there has been a decrease in demand .....	3

**K. If there has been a change, what do you believe accounts for it?**

**L. How challenging are the following issues to your organic production?**

	<u>Not a challenge</u>	<u>A small challenge</u>	<u>A moderate challenge</u>	<u>A major challenge</u>
1. Obtaining organic feed .....	1	2	3	4
2. Marketing .....	1	2	3	4
3. Transportation of livestock .....	1	2	3	4
4. Herd health .....	1	2	3	4
5. Meeting organic requirements for housing or space .....	1	2	3	4
6. Proximity to locker or processing facility .....	1	2	3	4
7. Obtaining veterinary care .....	1	2	3	4
8. Other (please write in) .....	1	2	3	4

**M. How much do the following factors influence your farm management decisions?**

	<u>Not at all</u>	<u>A small amount</u>	<u>A moderate amount</u>	<u>A large amount</u>	<u>Extremely influential</u>
1. Ethical considerations .....	1	2	3	4	5
2. Environmental considerations.....	1	2	3	4	5
3. Financial considerations.....	1	2	3	4	5
4. Spiritual considerations.....	1	2	3	4	5
5. Family considerations.....	1	2	3	4	5
6. Other (please write in) .....	1	2	3	4	5

**Section II. Availability of Veterinary Services**

**A. How satisfied are you with the quality of veterinary care available for your organic system? (Circle only one number)**

- I am mostly satisfied.....1  
 I am somewhat satisfied .....2  
 Not sure .....3  
 I am somewhat unsatisfied .....4  
 I am mostly unsatisfied.....5

**B. How big of a challenge is it for you to obtain quality veterinary care for your organic livestock production system? (Circle only one number)**

- It is not very difficult.....1  
 It is a challenge, but no more so than with non-organic farming systems ...2  
 It is more difficult than with non-organic farming systems .....3  
 It is almost impossible .....4

**C. Is your farm's profitability limited by lack of available organic veterinary care? (Circle only one number)**

- No, my profitability is not limited by this factor .....1

- Yes, my profitability is somewhat limited.....2  
 Yes, my profitability is significantly limited .....3  
 I do not know .....4

**D. Where do you obtain the majority of your routine veterinary care? (Circle only one number)**

- I deal with the majority of routine veterinary needs myself .....1  
 Someone else employed on my farm handles most of  
 the routine veterinary care .....2  
 I rely mostly on a veterinarian within 50 miles of my farm .....3  
 I rely on a veterinarian whom I consult by telephone  
 or who travels more than 50 miles to get to my farm. ....4

**E. Where do you obtain the majority of your emergency veterinary care? (Circle only one number)**

- I deal with the majority of emergency needs myself .....1  
 Someone else employed on my farm handles most of  
 the emergency veterinary care .....2  
 I rely mostly on a veterinarian within 50 miles of my farm .....3  
 I rely on a veterinarian whom I consult by telephone  
 or who travels more than 50 miles to get to my farm. ....4

**F. If you circled 1 or 2 on either D or E above, it looks as though you or someone on your farm handles a good portion of veterinary needs. Why do you choose not to rely on a veterinarian for those needs? (Check all that apply)**

- ☐ Does not apply (*please skip to question G*).  
☐ My farm has the capacity to handle most health challenges on its own.  
☐ My farm does not experience enough herd health challenges to consult a veterinarian routinely.  
☐ My farm does not experience enough herd health emergencies to consult a veterinarian for emergency care.  
☐ I haven't found a local vet who is willing operate in organic systems.  
☐ I haven't found a local vet who understands the requirements specific to organic production.  
☐ Other (please explain):

**G. Based on your experience, please indicate your level of agreement or disagreement with the following statements about local veterinary providers.**

	<u>Strongly agree</u>	<u>Somewhat agree</u>	<u>Not sure</u>	<u>Somewhat disagree</u>	<u>Strongly disagree</u>
1. Local vets know how to deal with sick animals under organic guidelines.....	1	2	3	4	5
2. Local vets know how to deal with injured animals under organic guidelines .....	1	2	3	4	5
3. Local vets have an adequate knowledge base to deal with organic livestock .....	1	2	3	4	5
4. Local vets have the products necessary to deal with the health problems common on my farm .....	1	2	3	4	5
5. Local vets are generally supportive of organic production.....	1	2	3	4	5

**H. On your farm, how often do you rely on each of the following for information on common herd health problems?**

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>
1. Books.....	1	2	3	4
2. The Internet .....	1	2	3	4
3. Organic and veterinary workshops and field days ...	1	2	3	4
4. Past experience and personal knowledge .....	1	2	3	4
5. Word of mouth .....	1	2	3	4
6. A veterinarian .....	1	2	3	4

**Section III. Organizational Membership**

**A. Are you a member of any farming organizations that provide education regarding organic livestock production?**

No .....1

Yes .....2 → *If yes, please list these organizations:*



**B. Are you involved with any farming organizations that provide publications that pertain to organic veterinary care?**

No .....1

Yes .....2 → *If yes, please list these organizations:*

**C. Have you attended workshops or field days dealing with topics related to organic herd health care?**

No.....1 → **If no, go to Question E.**

Yes .....2 → *If yes, what workshops or field days (Please list):*

**D. If yes, how satisfied were you with the information you obtained at these events?**

Highly satisfied .....1

Somewhat satisfied .....2

Undecided .....3

Somewhat unsatisfied .....4

Highly unsatisfied .....5

**E. If not, why have you chosen not to attend? (Check all that apply)**

- ☐ It was too far to travel.
- ☐ It was too expensive.
- ☐ It was held at a time that was inconvenient.
- ☐ By the time I heard about it, it was too late.
- ☐ I was skeptical about the quality of information that might be presented.
- ☐ I can get the information in some other way.
- ☐ Other (*please write in*):

#### **Section IV. Background Information**

**A. What is your age?** \_\_\_\_\_ years

**B. Are you:** Male .....1      Female.....2

**C. How many years have you been farming?** \_\_\_\_\_ years

**D. If you have a veterinarian who has been very helpful in providing organic veterinary care, please provide his/her name:**

---

**Thank you for your cooperation!**

*Please use this space to provide additional information or comments.*

#### **... and justice for all**

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Jack M. Payne, director, Cooperative Extension Service, Iowa State University of Science and Technology, Ames, Iowa.



## Iowa Veterinary Medical Association

David (Dan) Whitney, DVM  
President

Teresa Carmichael, DVM  
President-Elect

William Williams, DVM  
Vice President

James West, DVM  
Past President

Tom J. Johnson, DVM  
Executive Director

June 2, 2010

Colleagues:

There is included in this letter a survey conducted by Jennifer O'Neill, a graduate student in Sustainable Agriculture at Iowa State University. The purpose of the survey is to determine veterinarian's interest and activity in providing service to organic livestock producers. There is a concurrent survey of organic producers to determine where they receive veterinary advice and service.

Please take the time to complete this survey. This information will be very helpful in measuring interest in having the IVMA provide continuing education opportunities for practitioners to learn how to better serve this growing market.

James K. West DVM., MS.  
Armbrust Professor of Clinical Medicine  
Iowa State University

Tom J. Johnson DVM.  
Executive Director  
Iowa Veterinary Medical Association

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

June 15, 2010

Title/name

Address

City, State

**Graduate Program in  
Sustainable Agriculture (GPSA)**

253 Bessey Hall

Iowa State University

Ames, Iowa 50011-1020

tel: 515.294.6518

fax: 515.294.1337

email: [gpsa@iastate.edu](mailto:gpsa@iastate.edu)

Dear Dr. \_\_\_\_\_

As a veterinarian dealing with production animals, you may be aware of some of the veterinary challenges specific to organic farming. Because of the increase in organic farming, along with the unique health care requirements related to organic systems, I am conducting research to evaluate how the needs of organic farmers can best be met. This information will be useful to those who offer education and outreach to veterinarians, veterinary students and farmers.

This survey, sponsored by the Leopold Center for Sustainable Agriculture, focuses on the knowledge, experiences, and opinions of veterinarians in Iowa. Your name was obtained from a list of veterinarians provided by the Iowa Veterinary Medical Association with the help of Dr. Jim West, DVM, who is a primary cooperator in this project.

In order to make sure that the results of this questionnaire are representative of practicing veterinarians in Iowa, it is important that each questionnaire is completed and returned in the enclosed envelope. However, it is important to note that your participation is voluntary and you may skip any questions you prefer not to answer.

The results of the questionnaire will be kept completely confidential. The identification number on the return envelope will be used for mailing purposes only; it will allow us to check your name off the list when the survey is returned to us. Your name will never be placed on the survey itself. The researcher who handles the raw data will not disclose the information provided by individual survey respondents.

If you have any questions regarding this questionnaire, I would be happy to answer them. Feel free to contact me by email ([joneill@iastate.edu](mailto:joneill@iastate.edu)) or telephone (515.294.3763).

Thank you very much for your time.

Sincerely,

Jenny O'Neill  
Graduate Student in Sustainable Agriculture  
Iowa State University  
(515) 294 - 3763

# Organic Veterinary Care Study: A Survey for Veterinarians



June 2010

Cooperators: Leopold Center for Sustainable Agriculture, Iowa Veterinary Medical Association, Graduate Program in Sustainable Agriculture, Departments of Sociology and Agronomy, ISU Extension, and Colleges of Agriculture and Life Sciences and Veterinary Medicine.

IOWA STATE UNIVERSITY  
University Extension



## Organic Veterinary Care Study: A Survey for Veterinarians

**Do you provide veterinary services for livestock produced for food or fiber?**

Yes .....1

No.....2 → **If no, do not complete the rest of the survey;  
however, please return it in the enclosed envelope.**

### **Section I. Organic Agriculture Attitudes, Knowledge and Involvement**

**A. What is your level of interest in organic livestock production? (Circle only one number)**

- I am very interested .....1
- I am somewhat interested .....2
- Undecided.....3
- I am somewhat uninterested .....4
- I am not interested at all .....5

**B. Which statement most accurately characterizes your level of knowledge pertaining to veterinary care for organic livestock? (Circle only one number)**

- I am well versed in organic treatment options for common health challenges in a variety of species .....1
- I am well versed in organic treatment options for health challenges common to the species which I treat most frequently .....2
- I know of a few organic treatment options for some health challenges occurring in the species I treat most frequently.....3
- Although they may exist, I have very little knowledge of organic treatment options for most health challenges .....4
- I do not believe quality treatments exist for most health care challenges in organic production systems.....5

**C. Which statement best describes the average level of veterinarians' knowledge pertaining to veterinary care for organic livestock? (Circle only one number)**

- The typical veterinarian is well versed in organic treatment options for common health challenges in a variety of species.....1
- The typical veterinarian is well versed in organic treatment options for health challenges common to the species which they treat most frequently .....2
- The typical veterinarian knows of a few organic treatment options for some health challenges occurring in the species they treat most frequently.....3
- The typical veterinarian has very little knowledge of organic treatment options for most health challenges .....4
- The typical veterinarian believes that effective organic treatment options do not exist for most health challenges. ....5

**D. How do you believe most veterinarians view organic livestock production?**

- Most veterinarians are very much in favor of organic agriculture.....1  
 Most veterinarians have some reservations about organic agriculture .....2  
 Most veterinarians are indifferent regarding organic agriculture .....3  
 Most veterinarians are opposed to organic agriculture .....4

**E. Do you believe the profitability of organic farms would increase with improved veterinary understanding of organic systems? (Circle number of answer)**

- No.....1  
 Yes, they would likely see some increase in profits .....2  
 Yes, they would likely see a significant increase in profits .....3  
 I don't know .....4

**F. Indicate your level of agreement with the following statements about organic agriculture. (Circle only one number for each statement.)**

	<u>Strongly agree</u>	<u>Somewhat agree</u>	<u>Not sure</u>	<u>Somewhat disagree</u>	<u>Strongly disagree</u>
1. Organic agriculture is typically better for the environment.....	1	2	3	4	5
2. Organic agriculture is economically a good idea for farmers .....	1	2	3	4	5
3. Organic agriculture means fewer profits for veterinarians.....	1	2	3	4	5
4. Organic agriculture is not a viable production system .....	1	2	3	4	5
5. Organic agriculture meets a consumer demand.....	1	2	3	4	5
6. Organic agriculture meets a consumer demand.....	1	2	3	4	5
7. I would prefer to respond to a call from a non-organic farmer requesting services than from an organic farmer .....	1	2	3	4	5

**G. Whether you support organic agriculture a little or a lot, you may have ideas about specific ways in which it could be improved. Please share your ideas about specific ways here or in the space provided on the last page.**

**H. Do you feel that adequate information is available for veterinarians and veterinary students who are interested in organic production systems? (Circle number of answer)**

- Yes, adequate information is available .....1  
 Maybe. The information is out there, but it is difficult to access .....2  
 No, adequate information is not available .....3

**I. During your veterinary education, was it an option for you to receive instruction regarding treatment for organic livestock? (Circle number of answer)**

- Yes, the option was available.....1  
 Not sure..... 2  
 No, the option was not available.....3

**J. Do you believe that Veterinary Medicine programs ought to provide more education regarding organic production? (Circle number of answer)**

- Yes, this is an important topic for veterinarians and veterinary students .....1  
 Undecided .....2  
 No, adequate education is already provided on this topic .....3  
 No, it is not the place of these programs to provide this education .....4

**K. Are you a member of any farming or veterinary organizations that provide education regarding organic livestock production? (Circle number of answer)**

- No.....1  
 Yes .....2 ➔ If yes, which ones?

**L. Are you aware of any workshops or field days that deal with veterinary care for organic livestock? (Circle number of answer)**

- Yes, I have attended at least one of these events .....1  
 Yes, I am aware of some, but have never attended one .....2 ➔ Skip to Question O  
 No.....3 ➔ Skip to Question O

**M. Overall, how satisfied have you been with the information obtained at the event(s)?**

- Highly satisfied .....1  
 Somewhat satisfied .....2  
 Undecided .....3  
 Somewhat unsatisfied .....4  
 Highly unsatisfied .....5



**N. Which event(s) have you found most useful?**

**0. How often do you rely on each of the following for knowledge pertaining to organic standards and treatment options for veterinary care?**

	<u>Never</u>	<u>Rarely</u>	<u>Sometimes</u>	<u>Often</u>
1. Veterinary associations.....	1	2	3	4
2. Books .....	1	2	3	4
3. Internet .....	1	2	3	4
4. Other veterinarians .....	1	2	3	4
5. Organic inspection, certification and education agencies .....	1	2	3	4
6. Veterinary workshops and continuing education.....	1	2	3	4
7. Veterinary journals and magazines .....	1	2	3	4
8. University or other academic/research institutions ....	1	2	3	4

**P. Please provide names for each source of information listed above that you use. (If you need additional space, please use the last page of the questionnaire.)**

**1. Veterinary associations:**

**2. Books:**

**3. Internet sites (provide address if possible):**

**4. Other veterinarians:**

**5. Organic inspection agencies:**

**6. Veterinary workshops and continuing education:**

**7. Veterinary journals and magazines:**

**8. University or other academic/research institutions:**

**9. Other sources of information not listed above:**

**Q. If you heard about an educational event related to organic veterinary care, would you attend?** (*Check all that apply*)

- ☐ Yes, if the location, timing, and price were right.  
☐ Yes, if I believed quality information would be provided.  
☐ Yes, if I received continuing education credits.  
☐ No, I do not believe quality information would be provided.  
☐ No, I would not be interested in the information.  
☐ No, I can get the information elsewhere.

**R. In general, how do you believe herd health on organic farms compares with non-organic farms in terms of amount of sickness, longevity and productivity?**

	<u>Organic does better</u>	<u>About the same</u>	<u>Organic does worse</u>	<u>Don't know</u>
1. Amount of sickness.....	1	2	3	4
2. Longevity .....	1	2	3	4
3. Productivity .....	1	2	3	4

**S. In your opinion, should veterinarians have a role in developing organic animal agriculture?**

No..... 1

Yes..... 2 → If yes, what role?

## **Section II. About Your Practice**

**A. For what type of livestock do you most frequently provide care?** (*Circle only one number*)

- Beef cattle..... 1  
Dairy cows..... 2  
Sheep..... 3  
Goats..... 4  
Poultry..... 5  
Pigs..... 6  
Other (specify:.....)..... 7

**B. Approximately how many clients did you serve last year?** \_\_\_\_\_

**C. Have you experienced a growth in demand for organic veterinary services in recent years?**

- Yes, there has been a notable increase in demand..... 1  
No, demand has been fairly consistent..... 2  
No, there has been a decrease in demand..... 3

- I don't know .....4
- D. Have you made a point to market your services to organic producers in recent years?** (*Circle number of your answer*)
- Yes, I have made some attempt to market my services to organic producers .....1
- No, people learn through word of mouth that I provide care for organic livestock .....2
- No, I have not made an attempt to reach out to this group .....3
- E. Do you work with organic producers?**
- No.....1 ➔ If no, go to Section III, Question A below.
- Yes .....2 ➔ If yes, what percentage of your clients would you estimate are organic producers? \_\_\_\_\_%
- F. Do the organic farms you deal with typically require more or fewer routine visits (reproductive checks, preventive medicine), compared to non-organic producers?** (*Circle number of answer*)
- More .....1
- About the same .....2
- Fewer.....3
- I don't know .....4
- G. Do the organic farms you deal with typically require more or fewer emergency visits, compared to non-organic producers?** (*Circle only one number*)
- More .....1
- About the same .....2
- Fewer.....3
- I don't know .....4

### Section III. Background Questions

- A. What is the approximate size of the town in which your practice is located?**
- \_\_\_\_\_ people
- B. What is your age?** \_\_\_\_\_ years
- C. Are you:** Male .....1 Female.....2
- D. How many years have you been a practicing veterinarian?** \_\_\_\_\_ years

**Thank you for your cooperation!**

*Please use this space to provide additional information or comments.*

**... and justice for all**

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